

The Mining Journal

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No Shocks from Washington

IT is axiomatic that the outlook for the mining and metal industries of the free world is inseparably linked with American defence and stockpiling policy and with the general level of industrial activity across the Atlantic. The news that President Eisenhower has asked Congress for a further increase in government spending may thus be taken as an indication that, generally speaking, the upward trend in the overall demand for most metals and minerals will continue during the coming twelve months.

The President's 1957-58 budget estimates revenues for the next fiscal year at \$73,600,000,000, and expenditure at \$71,800,000,000, leaving a surplus of \$1,800,000,000. For the current year, ending June 30, the President forecast a \$1,700,000,000 surplus based on \$68,900,000,000 of spending and \$70,600,000,000 of revenue. Spending for the coming fiscal year will be the highest since 1952-53, at the height of the Korean War, when it totalled \$74,300,000,000.

An increase of \$2,000,000,000 in the Defence programme to \$38,000,000,000 is regarded as necessary because the new and more powerful weapons now being delivered to the armed forces are much more costly to produce, operate and maintain, than the weapons they are replacing. Spending plans call for a 35 per cent greater outlay for guided missiles, bringing the total to \$2,000,000,000 but, on the other hand, expenditure on aircraft will decline to \$6,700,000,000—a reduction of almost \$50,000,000. While the consequences of this change of emphasis must remain a matter for conjecture, the efforts of the U.S. government to expand supplies of nickel and other high temperature metals might be regarded as an assurance that the demand for these materials will continue rising.

Expansion of the shipbuilding programme (by \$112,000,000 to slightly over \$1,000,000,000) will lead to increased demands for steel plate and for all the various metals which are used in the construction of ships, whether powered by nuclear reactors or by more conventional means. Construction subsidies to private shipping lines will also be increased.

Mr. Eisenhower has proposed a \$400,000,000 spending increase by the Atomic Energy Commission bringing that agency's expected outlay in the fiscal year to a record \$2,300,000,000. As in past years, the bulk of the spending will go for procurement of uranium and special nuclear materials and the production of more and newer types of nuclear weapons. "Substantial" additional tonnages of uranium ore concentrates will be purchased from U.S. and Canadian producers. The cost of raw materials and special nuclear materials procurement and weapons production alone will exceed \$1,600,000,000.

Also noteworthy are the President's plans to stimulate house construction both by raising the interest rate ceiling on government-backed home loans and by asking for more money for the Federal National Mortgage Association. These measures, if authorized, might go far to counteract the effects on the metal market of the reduced demand from the automotive industries, should the anticipated improvement in the sales of motor cars fail to

materialize in the immediate future.

It stands to reason that the contemplated expansion of the foreign aid programme, with its emphasis on more money and greater flexibility, will be reflected by substantial orders for minerals, and also for mining and constructional equipment, to be used for major projects in a number of free world countries.

So far as America's own minerals policy is concerned, the President envisages less stockpile buying, but more money for the domestic minerals purchase programme. He said that buying for the strategic stockpile will decline, continuing the trend of recent months. In general, purchases will be limited to materials for which contracts have already been made, domestic materials that can be acquired at "favourable" prices, and barter of agricultural surpluses for foreign strategic materials, such as lead and zinc. The government plans to spend about \$69,000,000 domestically for the stockpile in the coming fiscal year, compared with about \$96,000,000 during the current fiscal year. Barter is expected to bring in about \$105,000,000 of strategic materials—almost three times as much as the \$36,000,000 worth in 1956-57.

The President asked for \$40,000,000 to complete a \$91,000,000 purchase programme for domestic tungsten, asbestos, fluorspar and columbium-tantalum to help the industry in the period between the end of stockpile buying and "normal market conditions". G.S.A. will continue work under the Defence Production Act on purchase programmes of domestic materials such as beryl, mica, mercury and manganese; expansion programmes to increase mining or refining capacity of such materials as aluminium, copper, nickel, molybdenum, fluorspar, titanium and zinc by offering guaranteed markets; and increased production of nickel at the government-owned Nicaro nickel plant in Cuba.

While these proposals hold out little prospect of further stockpiling assistance to mineral exporters outside the U.S., the barter programme will continue to be a bull-point for certain metals. At the worst, it can be said that, having regard to the recent trend of stockpiling and domestic purchase programmes, there are no unpleasant surprises in the President's proposals.

A HOBART HOUSE WITH DIAMONDS

Undaunted by the pitfalls with which the path of the economic planner is so frequently beset, the government of India is pushing forward with its programme for the controlled development of mining and industry in both the public and private sectors.

Nationalization and mechanization are the twin lines of development envisaged for the diamonds in Panna, Madhya Pradesh, where there are seams which are claimed to extend over 750 sq. miles. The possibility of mining for diamonds in Golkonda and other areas in Andhra Pradesh has also been envisaged. It is expected that these areas will be investigated by the Russian experts who visited Panna last year.

An independent corporation to control and regulate the survey of diamond deposits and the production and distribution of diamonds in Panna and elsewhere is to be formed as soon as the legislation necessary for the purpose has been adopted. Meanwhile, a committee of experts, which includes a representative from the Ministry of Finance, Government of India, has been appointed to determine the amount of compensation to be paid to private owners, both small and big.

Mr. Manubhai Shah, Minister for Heavy Industries, Government of India, said recently that the formation of

a National Coal Development Corporation would shortly be announced. This step has been decided upon with the object of stepping up coal production, which at present stands at 38,000,000. It is intended to raise it to 48,000,000 tons. Mr. Shah said that the present coal consumption in India (per capita) was, in his opinion, the poorest in the world.

The proposed Coal Development Corporation will be launched with a capital of Rs.500,000,000. It will amalgamate all the existing collieries in India. Ranchi has been chosen as the corporation's headquarters because it is centrally situated in relation to the mines.

MINING NEEDS CHEMICAL ENGINEERS

When this Journal was first published, in the days when mining was still confined, broadly speaking, to the extraction of minerals and metals on a relatively small scale from high-grade ores at shallow depths, engineering fell mainly into two broad categories, civil and military.

This simple classification no longer holds good, due both to the accelerating tempo of scientific and technological progress and to the magnitude and complexity of modern undertakings, which are reflected by an inevitable tendency towards greater specialization. Thus the advent of the machine age opened up a new and well defined field of engineering, as did the discoveries which led to the development of electricity as a source of light and power.

Both the mechanical engineer and the electrical engineer have long been associated with mining, as with nearly all other industries, and, each in his own field, is making contributions of inestimable importance to mining technology. Now the stage has been reached where the application of chemical techniques to mineral dressing and extractive metallurgy has created a need for still more specialists, which, again, is paralleled by similar trends in other industries. Amongst outstanding contributions which the chemical engineer has already made to mining, is the application of ion exchange methods to the extraction of uranium oxide from concentrates. An interesting example of future possibilities was given recently in *The Financial Times* by Sir Harold Hartley, who said it had been demonstrated on an experimental scale that iron ore of suitable grade can be reduced directly with tonnage hydrogen in a fluidized bed sufficiently to enable it to be utilized in an open hearth steel furnace.

It follows that the mining industry, which for many years has accepted as axiomatic the necessity for employing mechanical engineers and electrical engineers has now opened its doors to the chemical engineer. This, of course, has already come about to a considerable and rapidly increasing extent, but the advent of this new specialist makes it desirable to study very closely the scope for closer co-ordination between the extractive metallurgist and the chemical engineer. Only thus can we ensure that mining will derive the utmost benefit from the experience gained by the chemical engineer in other industries, much of which may be directly applicable to ore treatment and extractive metallurgy. Otherwise, there is a very real danger that much effort may be devoted within the mining industry to problems which have already been solved elsewhere.

It is fortunate that in the Imperial College, the Ore Dressing Department of the Royal School of Mines and the Chemical Engineering Department should be situated within a few yards of one another, since this should facilitate a co-ordinated approach to research on problems of common concern. It is obviously desirable that there should be close liaison between these bodies and

other groups elsewhere in England who are concerned with problems encountered in ore dressing, such as the habits of the colloidal materials.

Sir Harold Hartley has suggested that some universities in the U.K. should establish departments of mineral processing and extractive metallurgy which would work in close touch with the departments of chemical engineering. These could then provide post-graduate courses for chemical engineers wishing to specialize in ore treatment.

This approach has doubtless much to commend it, but it would appear *prima facie* that the establishment of new departments might lead in some instances to duplication and overlapping, which could be avoided by concentrating rather on the co-ordination and full utilization of facilities already in existence at the Imperial College and elsewhere.

PROSPECTING MALAYA BY AIR

More than 35,000 miles of hitherto unexplored jungle in Malaya are being surveyed for mineral deposits in the first major Colombo Plan project undertaken by Canada in that country. The cost of the survey is expected to be about \$400,000 and will be almost equally divided between Canada and Malaya.

During the survey of Malaya large areas in the states of Kedah, Perak and Selangor, Negri Sembilan and Malacca, Johore, Pahang and Trengganu will be explored. The bases for the first phase of the project, covering three western areas, is Kuala Lumpur. After this phase has been completed the Canadian team will move to Singapore which will be the operations base for the survey of three eastern areas.

Much of the area to be explored is remote and inaccessible virgin jungle which could not be surveyed economically by conventional ground reconnaissance. Aerial photographs will be used in preparing the survey flight maps and in making the survey the plane will fly at a height of 500 ft. above the jungle. Intensive ground studies will then be made of those areas which the aerial survey indicates may contain important mineral deposits.

Prospectors will endeavour to verify if Malaya has workable hidden reserves of uranium, traces of which have already been found in some parts of the country. The aircraft will survey about a third of Malaya during the four-month assignment.

Technical assistance for Malaya up to now has included both training in Canada for seven trainees, three of whom are in Canada now, and the sending to Malaya of fifteen experts in various fields. Several of these experts are at present in Kuala Lumpur.

U.S. PRICE SUPPORT OF COPPER ?

An interesting news item from the United States has been a statement by Mr. Simon B. Strauss, of American Smelting and Refining Co., on the course of copper prices. He states that, though copper prices have fallen, they still appear vulnerable because of the prospective increase in supply. He went on to say that "Government buying of copper for the stockpile or on a barter basis may develop in a way that will bring stability to that market for a time, just as has been done for lead and zinc".

This statement has caused a great deal of interest. If the United States government is to support the copper market by stockpiling activities, at what level is this support to be forthcoming? It is surely wildly improbable that the government would consider mopping up the relatively small

surplus of copper at the present price of 36 c. More buying might be started up at 33 c., and possibly at 30 c. the government might consider it was getting time to support the industry, but there is enough copper in the stockpile to safeguard American interests, and no one could claim that the general prosperity of the American copper mining industry is threatened while the producers are able to obtain 36 c. for their metal. Furthermore, lead and zinc (which Mr. Strauss quoted as parallel cases) are now being bought not for the strategic stockpile, but for the long-term objective, and supplemental, stockpiles.

The main purpose of the long-term and supplemental stockpiles is not so much to acquire physical stocks of commodities, but to provide sufficient guarantees and a sufficient level of demand to keep the particular commodity-producing industries in a healthy state and capable of rapid expansion if need be. Thus the American government is buying domestic lead and zinc, not because it needs the metal, but to keep the mines open.

In the same way the copper mining industry is already receiving substantial government assistance by way of price guarantees and a very large part of the new production that is now being brought in, is supported by price guarantees of one kind or another. Thus there is no reason for the American government to increase its support unless it feels that the price guarantees arranged some time ago are now pitched so low as to threaten, at contemporary costs, the continuing existence of the mines. But of this, at the present time, there is not the slightest evidence.

BUMPER YEAR FOR COAL

With provisional output figures coming in from the principal coal mining areas the general picture is seen to be one of increased production. The cherry on the export cake was taken by the United States which, largely as a result of a greatly stimulated overseas market, boosted its soft coal output by 40,000,000 s.tons.

Total production in the U.S. last year was 505,000,000 tons—a gain of some 8.5 per cent over the previous year. During the year 67,000,000 tons were exported, this constituting a record figure. Long-term prospects are particularly bright and according to Mr. H. R. Schmidt, President of the North American Coal Corporation, demand for coal in 1965 will have reached 800,000,000 tons. This 300,000,000 tons increased capacity would cost some 2½ billion dollars to finance and the President of the N.A.C.C. has warned that only about 20 per cent of this could be provided by the industry leaving \$200,000,000 annually to be found from external sources.

In Western Europe output of hard coal last year increased by just over 1 per cent to 246,500,000 tonnes. All of the increase was due to stepped-up German production which more than made up a 1,000,000 tons deficit from the remaining five coal-producing community countries.

In Britain the result of the year's working showed a slight drop in deep mined coal from the 1955 figure of 210,190,000 tons to 209,950,000 but this was offset by increased opencast production which last year reached 12,070,000 tons. The total U.K. output thus showed a slight gain of 0.2 per cent at 222,020,000 tons as against the 1955 total of 221,550,000 tons. During the year the number of faceworkers fell by 2,000 so that the productivity per man year on the face in fact increased from 728 to 734 tons notwithstanding the fall in actual output raised and weighed.

Preliminary estimates indicate that Russian output is up by 10 per cent and that of China by no less than 20 per cent. India, too, expects a record year.

Mining and Exploration in Fiji

INCREASED mining and prospective activities in Fiji are noted by the Department of Lands, Mines and Surveys in its annual report for 1955.

During the year the mining industry produced 74,187 oz. of gold and 20,421 oz. of silver valued at £F1,021,783 and £F8,168 respectively. Total manganese exports during 1955 were valued at £F122,218 at a total dry weight tonnage of 8,684 l.tons. They included 17,699 l.tons of high-grade export ore.

At the large gold mines at Vatukoula preparations were under way for exploration work and possible mining to be carried out at deeper levels to what appear to be newly located oreshoots. Associated special mining and ventilation problems are receiving consideration.

The most substantial mining operations carried out in Fiji are those at Vatukoula, Viti Levu, conducted by the Emperor Gold Mining Co. Ltd. and Loloma (Fiji) Gold Mines N.L.

Emperor milled 156,048 tons of ore during the year, the average head being 8.9 dwt. per ton. Owing to concentration of a considerable portion of plant and labour resources on an internal shaft project, development footage on new ore was much lower than in the previous years. The grade of ore reserves, however, rose slightly in sympathy with the generally better value of the ore being developed in the flat-makes in the eastern area of the mine. As on June 22, 1955, total measured ore was 694,700 tons averaging 8.4 dwt. (8.5 dwt. in 1954) and indicated ore 239,500 tons, averaging 7.5 dwt.

The skyshaft and ropeway rises of the internal shaft, started in the previous year, were completed, stripped to size and timbered, while the pilot shaft between Nos. 8 and 9 levels was stripped and equipped with shaft timbering. An electric winding engine, electricity supply and substation were installed at No. 8 level and the internal shaft was continued at full timbered size for a further 410 ft., reaching a depth of 25 ft. below No. 12 level plat. Plats were provided at Nos. 10, 11 and 12 levels, which were in course of preparation for full-scale development. During sinking, the internal shaft passed through several ore zones representing the dipping lodes developed on Nos. 8 and 9 levels in the eastern areas. These intersections, including several of good grade ore, supported the expectations of downward extensions of ore seams, lending more weight to the indications of ore revealed at greater depths by churn drilling further east.

A feature of the year's mining was the virtual completion of extraction of ore from the shatter zone, only the

pillars being left, and from the larger steem orebodies associated with the hanging wall in the upper levels. The tonnage formerly won from these areas and from open-cutting, the latter nearing completion, was being drawn from the lower levels of the mine.

During 1955 Loloma mined 18,027 tons of ore averaging 11.256 dwt. per ton. No new ore was developed and the ore mined represented a net reduction of ore reserves. Apart from a block containing 2,400 tons of 60 dwt. ore which had previously been reported as not available for

stopping till the end of mining on the field, Loloma's only remaining ore was 9,000 tons averaging 10.1 dwt. per ton, including 2,044 tons on surface at the close of the year. It was expected that this would all be mined during the year 1955-56, after which there appeared to be no hope of further active operation of the Loloma mine.

For the associated companies as a whole, the joint mill treated 181,313 tons of ore with an average head value of 9.415 dwt. per ton. The year's output brought the total ore treated by the associated companies from their commencement up to June 22, 1955, to 3,139,969 tons averaging 10.74 dwt. per ton, from which the recovery has been 1,540,622 f.oz. of gold and 429,531 oz. of silver.

The manganese industry has passed from the initial prospecting stage to small-scale production and increasing exports are anticipated. All the known manganese orebodies are small by world standards, but of high grade, and Fijian manganese has already created a name for itself on the world markets. A Manganese Ore Producers' Association has been established.

Viti Levu is the principal potential source of minerals in the entire Fiji group

Initial steps were taken to bring into production the Wainivesi base-metal prospect (*The Mining Journal*, March 4, 1955, p. 234) and exports, on a small scale, of copper-gold ore were anticipated during 1956.

The Fiji government is now actively participating in the search for, and development of, the mineral resources of the Colony. It is considered there are reasonable prospects that over the next few years the mineral industry will play an increasingly important part in Fiji's economy.

The New Mines Ordinance and Regulations were partly re-drafted during 1955. It was anticipated that they would be completed during 1956 and become effective in 1957.



Yugoslavia's Aluminium Industry

YUGOSLAVIA devoted considerable effort to the construction of her aluminium industry during the post-war period. Output of the metal increased from 1,795 tons and a mere 15 tons of rolled products in 1939, to 11,500 tons of raw aluminium and 6,400 tons of rolled aluminium goods in 1955. The completion of new production capacities currently under construction will raise production to 22,500 tons of aluminium and over 26,000 tons of rolled products.

The potential sources of hydro-electric power in Yugoslavia total 66.5 billion KWh. and 16,500 MW., of which only 4 per cent is being exploited at present.

Yugoslavia is also rich in low calor coal which can also be used for alumina production. Total coal deposits in

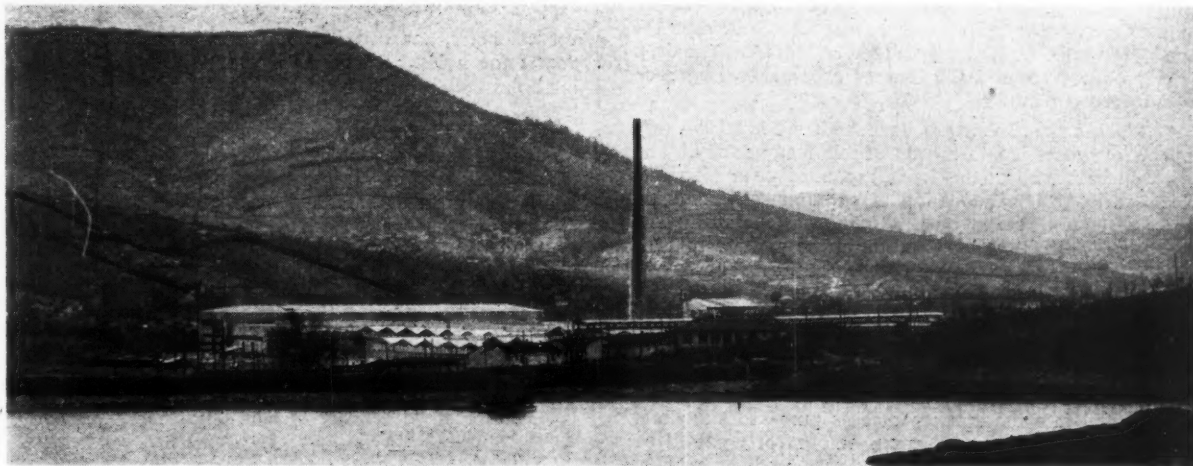
KWh. of seasonal electric power.

Over 100,000,000 tons of proven industrial bauxite deposits of A+B+C₁ grades are located in this region.

Several coal basins are likewise located in this region.

The Arandjelovata electroporcelain factory in Serbia, an example of the modern Yugoslav plant

The studies and analyses based on the results of the explorations conducted so far, show that there are favourable possibilities for the construction of an aluminium industry in Yugoslavia with a capacity of 265,000 tons of



Yugoslavia amounted to 21.3 billion tons at the end of 1954 of which lignite accounted for 19.2 billion tons.

The industrially useful deposits of bauxite of the A+B+C₁ grades totalled over 128,000,000 tons in 1956.

According to the estimates of the United Nations experts Yugoslavia is considered second only to Norway (in Europe) as regards the most favourable conditions for aluminium production. This appraisal was based on the actual possibilities for the generation of cheap hydro-electric energy, as the production of one ton of aluminium requires 20,000 KWh. of electric power. These conditions are rendered still more favourable by the fact that the bauxite deposits are located in the immediate vicinity of the water power sources (the production of one ton of aluminium requires 4.5 tons of bauxite, depending on quality).

The south-western part of Yugoslavia, namely Dalmatia, Herzegovina and Montenegro, represent a single aluminium producing region both as regards the natural raw materials and power sources. Substantial untapped reserves of coal, especially lignite, which is highly suitable for alumina production, are located in this area or its immediate vicinity.

Thus, for instance, the hydro-electric projects planned in this area (Perucica I and II, Komarica, Gornje Polje, Tara, Moraca, Grancarevo, Dubrovnik, Rama, Peruca, Split I and Senj) will be in a position to yield over six billion KWh. of constant electric power required for aluminium production, as well as an additional 2.7 billion

aluminium annually.

This programme foresees the construction of the following new projects: an aluminium works with a 100,000 ton capacity in the Niksic-Titograd sector in Montenegro; an aluminium factory with 100,000 tons of aluminium in Mostar (Herzegovina); an aluminium plant with 50,000 tons in the Split-Sibenik sector (Dalmatia); and the expansion of the existing aluminium electrolysis plant in Kidricevo (Slovenia) by another 15,000 tons of aluminium.

The agreement Yugoslavia concluded with the Soviet Union and East Germany on August 2, 1956, calls for the construction of an aluminium factory with a capacity of 100,000 tons of aluminium.

Under the terms of this agreement, Yugoslavia was given a \$175,000,000 credit at 2 per cent interest for the first stage of construction of this factory (which will have a 50,000 ton capacity), the necessary hydro-electric plants and other related projects (bauxite mines, soda and cathode plants, coal mining equipment, etc.).

According to the proposal submitted by a special commission of experts, the Federal Executive Council decided that the first factory with a final capacity of 100,000 tons, namely its first phase, be built in Titograd (Montenegro).

As the other locations, Mostar in Herzegovina and Split in Dalmatia, are likewise extremely suitable for the development of the aluminium industry, talks are currently under way with some Western countries (West Germany, France) for financing the construction of the projects planned in that region.

Quebec's

IN the hills of south-central Quebec, Canada, more particularly the region around Black Lake, Asbestos and Thetford Mines produces almost half of the world's asbestos supply.

Johnson's Asbestos Company is one of the oldest producers in the area. The company was founded in 1886, but a modernization and expansion programme has recently given a new look—and new production figures—to Johnson's. A new office building has been built near the firm's deep mine at the City of Thetford Mines. The deep mine produces about 2,500 tons of asbestos-bearing rock or mill feed per day.

At Black Lake, Johnson's have built a \$7,000,000 mill capable of processing 4,000 tons of mill feed per day. The new mill is located at the firm's expanded open pit mine. This was the original location of the Johnson Company where a 700-ton per day open pit mine was operated. The new mine, opened in 1953, produces over 4,000 tons of mill feed per day. This mine is on three levels and in two sections, making six separate benches. Recently the two sections were joined, enabling trucks to travel a one-way route from crusher to pit and return to the crusher.

The Johnson Company categorizes their mill feed as "high value—low yield rock" as only 2 to 3 per cent of the rock fed into the mill emerges as pure asbestos fibre. This naturally leaves an enormous amount of waste to be removed. There are actually three waste products, namely dirt overburden, barren rock that is not taken to the mill, and the mill waste or tailings. It can be seen that only a company using the most modern mining methods and equipment could hope to produce competitive priced asbestos profitably. Such a firm is Johnson's Asbestos Co.

Overburden at Johnson's averages 20 to 30 ft. and is removed and hauled away by a sub-contractor. Primary blasting is done each afternoon at 3.55 p.m. All the mines in the immediate area blast at this time as a safety precaution. The firm uses two Joy 4-in. rotary drills for the



vertical holes, and two Ingersol-Rand twin drills for horizontal toe holes. Set on 12 by 14 ft. centres, the blasting holes are 45 to 75 ft. deep. Usually 30 to 50 holes are blasted at one time to maintain enough shot rock for the next day's work. At the old pit an entire 150 ft. face was blasted at one time but now 40 ft. benches are used for greater safety. For the secondary blasting, completed at noon, Johnson's use assorted wagon drills and pluggers. The company uses 40 per cent Forcite as a blasting material.

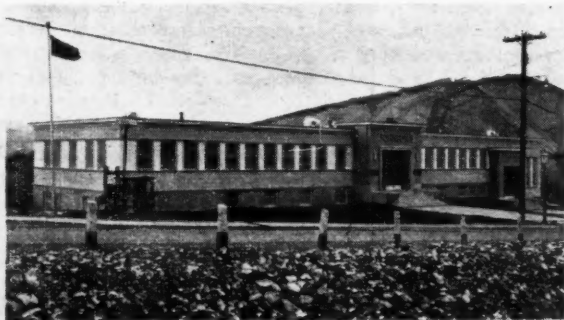
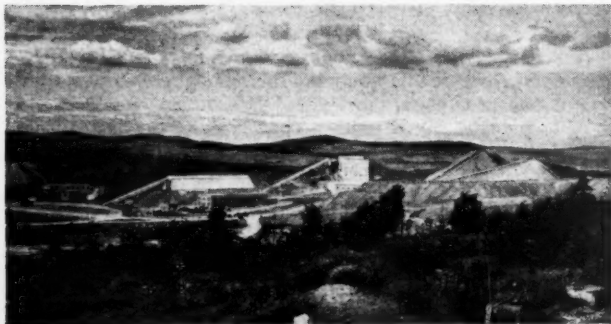
After blasting, the three production shovels move in.

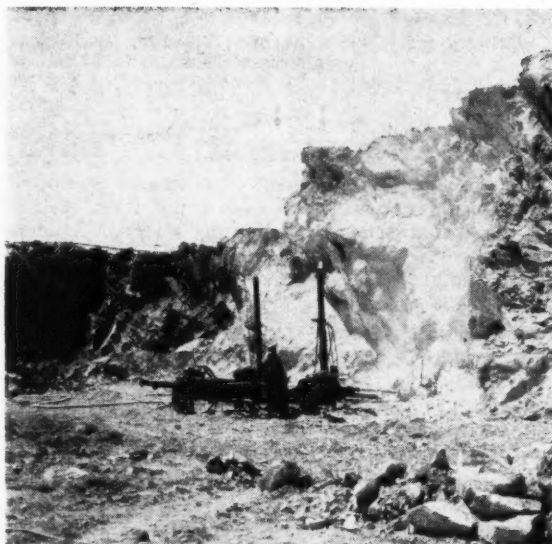
Asbestos

They are all Marion Ward-Leonard electric machines operating on 2,200 v. One is a four-year-old model 4161 with a 6-yd. dipper. The other two are new 3-yd. 101-M's. A Lima 2½-yd. is kept on hand as a spare shovel. The Marions load the barren rock, which is hauled to a dump, then the asbestos-bearing rock is loaded and hauled to the crusher. Johnson's use eight 22½-ton Mack trucks for pit hauling. The Marions handle about 8,000 tons of rock per 16-hr. day. Although the mill works a 24-hr. day, 5 days a week, the pit operates on a 40-hr. week. A D-8 Caterpillar and a LeTourneau-Westinghouse Tournadozer on rubber keep the pit areas clean.

As the length of the asbestos fibre greatly affects its value, much care is taken in protecting long fibre rock. When a pocket of such rock is found, it is hand-picked

The new 4,000-ton per day mill at Johnson's open pit mine is shown below left, together with tailing piles and the pit area, while at right is the company's new office building





At top of opposite page a 22½-ton Mack truck receives a 3 yd. dipper of asbestos-bearing rock from a Marion shovel, while above, the Ingersol-Rand drills used for horizontal blasting are shown

and the crude fibre put in bags. The bags are taken to the cobbling shed where the rock is hand-processed. As the workers pick this rock, a Bucyrus-Erie 1½-yd. shovel is used to turn and spread out the shot rock so none of the high-grade fibre will be passed by.

At the mill the 22½-ton Macks dump into a dry sluice from which a 60-in. Stevenson-Adamson pan feeder carries the rock to the primary and secondary crushers. The 1½-in. crushed rock is then conveyed to a dryer-house where it is heated to remove all moisture. From the dryer-house a conveyor moves the hot rock to the dry rock storage building. Another conveyor transports the rock from storage to the mill.

In the mill the asbestos rock goes through a series of crushers, ball mills and screenings. Above each vibrating screen is a powerful suction hood which draws the asbestos fibres out of the crushed rock and into a collector. The remaining rock (almost as fine as sand) is carried by conveyor to the waste or tailings pile. Finished asbestos is graded according to length and packaged in 100-lb. bags for shipment. A total of 90 per cent of the asbestos is shipped by rail and the remainder by truck. Johnson's Asbestos Co. ships its product all over the world.

Mountains

Maintenance operations are carried on in an 80 x 290 ft. building with overhead cranes and complete machine shop for mill repairs. A separate 60 x 100 ft. service garage is used for the trucks. For maintaining haul roads the company uses an Adams Road Grader. Three 3-ton Fargo yard trucks are available as well as a separate 4-wheel drive Fargo power wagon used for servicing the shovels. As winter temperatures reach as much as 30 deg. below zero, all the shovels have heaters, and a curtain behind the operator on each of the new Marions holds in the heat.

Mine Conveying Moves Ahead

Plain steel conveyor bands, originally introduced by The Sandvik Steelworks, Sweden, have been in use in that country for over 30 years, during which time hundreds of conveyors of this type have been installed for conveying all classes of materials. With the development of long conveyors, often at steep gradients, the reinforcement of multi-ply belts or the use of external drive ropes on rubber belts have become a trend. Recognizing the development the Sandvik Company introduced a rubber belt reinforced by a solid steel band. Information Bulletin 56/174, published by the National Coal Board, describes the installation of the first conveyor band of this type in the United Kingdom.

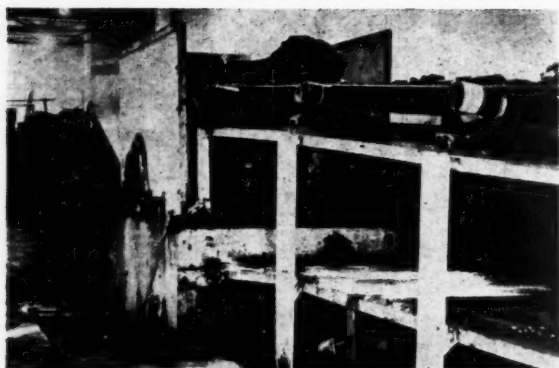
THE rubber-covered steel band conveyor has been evolved by the Sandvik Steelworks in conjunction with the Trelleborg Rubber Co. Ltd. The rubber covers are vulcanized to the steel with a special bonding agent, the thickness of rubber on the underside being 2 mm. and on the carrying side from 3 to 10 mm.

To prepare for jointing the rubber covers are removed for a length of about 12 in. from each end, and a taper is ground on the ends of the steel band. The inner surfaces of the steel band are covered with a solution, and a thin sheet of rubber placed between. The outer surfaces of the band are then coated with solution, the rubber covers applied, and the whole vulcanized for about an hour at a temperature of approximately 290 deg. F. and a pressure of 185 lb./sq. in.

Tests have proved that this type of joint is capable of withstanding a tension of at least 1,280 lb. for each sq. in. of the overlapping surface area before rupture. When a break does occur the rubber is sheared since the adhesion between rubber and steel is greater than the strength of the rubber. To avoid the necessity for grinding the end of the bands underground, an alternative type of joint has been devised for colliery use, namely the single strap butt.

A suitable application for such a belt arose at Woodside Colliery and, after a visit to Sweden to inspect several installations handling iron ore, it was decided to install a conveyor of this type. Sandvik Steel Band Conveyors Ltd. supply complete conveyors, but it was mutually agreed that for the first installation they should supply only the band, and should co-operate with The Mining Engineering Co. Ltd., who would supply the machinery and conveyor structure.

It was assumed that the size of the coal conveyed would be about 8 in. cube, but in practice the fragmentation is much larger. Details of the conveyor installed at Woodside are: capacity, 250 tons/hr. (output increasing); conveyor length, 610 yds.; gradient, 1 in 5 (11 deg.-18 deg.); total lift, 366 ft.; band speed, about 420 ft./min.; band, 32 in. by 0.04 in., with 5 mm. rubber cover 6 on carrying side and 2 mm. thickness on underside; drums, 50 in. dia. rubber-covered driving drum and 40 in. dia. tension drum; idlers, top strand troughed type 5 ft. pitch and bottom strand tubular rollers 10 ft. pitch; theoretical h.p. on head shaft, 130 h.p.; total tensile plus bending stress in band,



Delivery end of the conveyor at Woodside, discharging onto scraper chain

40,900 lb./sq. in. The driving gear consists of a 200 h.p. motor with scoop type fluid coupling.

The supporting steelwork is made up in 5 ft. bays, with two longitudinal angles on each side supported from vertical tee irons. The trough idler sets consisted originally of 12 in. horizontal tubular rollers in the centre, with 8 in. long tubular rollers inclined at 7 deg. on either side. This inclination is such as to avoid excessive bending stresses in the steel band. In plan the outer, inclined rollers are slewed 2 deg. in the direction of travel. The return rollers are of the tubular type, 2 ft. 2 in. long, and all rollers are 4 in. dia. and fitted with ball bearings.

The drive unit, intermediate structure and tension end were first erected and the rollers installed. Joints in the bands were then vulcanized in front of the conveyor delivery terminal, the jointed band being passed down over the return rollers, around the tension pulley and hauled up over the troughing rollers, the final joint being made *in situ* on the conveyor.

At the Malmberget Mine, Sweden, there is a rubber-covered steel band conveyor in operation which is of interest in relation to the installation at Woodside. Full output at Malmberget is achieved by three belts which together will transport 1,500 tons of ore per hr. The maximum capacity for one belt is approximately 700 tons per hr. The total length of each belt is 510 m., and belt speed is 3 m. per sec., with a drive motor of 450 h.p.

At Woodside, the conveyor was put into use in August, 1954. Many difficulties were experienced. Among them were those of the tracking of the band and the wander of the return strand, and some improvement was effected by two special scrapers with blades placed diagonally, fitted on the underside of the return band near the delivery terminal to remove the fines. In addition, the use of troughing idlers with 20 in. long horizontal centre rollers reduced band wander. The tracking of the band was brought to within reasonable limits by the substitution of the 12 in. long central rollers by 20 in. units, the inclined rollers being moved outwards to suit.

Other serious problems arose through the edges of the band being damaged from various causes, the result being

tearing for about 300 yds. Band damage at the edges also increased the risk of corrosion.

In September, 1955, a number of cracks developed in the edge of the steel band, which called for a review of the installation generally. Following a visit to Sweden to inspect the large iron ore conveyor of similar type, the installation at Woodside was reviewed. Consideration was given to the following points:

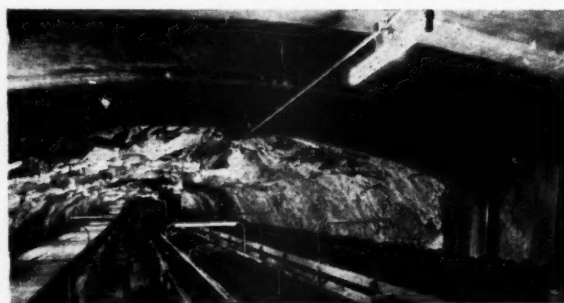
The original troughing rollers supplied were not satisfactory, but had been replaced with new ones which were successfully tracking the band. The return rollers had also been changed, although a great deal of damage to the edge of the band had been experienced, which left the steel edge exposed.

There was some doubt about the correctness of the contour of the driving terminal pulley. It was subsequently found that the contour was not suitable. All rollers supporting the top strand were of the troughed type, but at the position where the gradient of the conveyor changes it was considered that these rollers, and those leading up to the delivery terminal should be of the horizontal type to avoid the transverse stress, in addition to the longitudinal stress in the band.

The main advantage evident from the running of this new type of conveyor was that owing to the stiffness of the band there was very little deflection between the carrying rollers so that there was no movement of coal on the band. Consequently, with no spillage lumps of up to 18 in.—24 in. cube are conveyed without difficulty.

In spite of the teething troubles experienced with this experimental unit it was decided to fit a complete new band. This consisted of nine lengths and in order to maintain production three lengths were inserted each week-end. The new band has been working satisfactorily since December, 1955.

It should be recalled that before the decision was taken to install two experimental rubber-covered steel bands in the U.K., flame tests were carried out.



In the centre of the page is shown the conveyor belt installation at Malmberget, Sweden, while below is the loading end of the Woodside conveyor

Machinery and Equipment

New All-Steel Conveyors to be Built in Great Britain

The W.S. All-Steel Conveyors, introduced recently to Great Britain by Wharton Engineers (Elstree) Ltd., are now in production in this country, this company having secured the manufacturing rights for the United Kingdom and the Commonwealth. The N.C.B. is at present testing the equipment.

These conveyors have the ability to negotiate curves; other desirable features include conveying materials, such as dry sand, up gradients of 32 deg., handling hot materials with "on loading" heats of 700 deg. C. (1,292 deg. F.) and a form of construction that allows additional units to be inserted in small sections to increase the total length of the conveyor. Intermediate power drives can be incorporated as and where required.

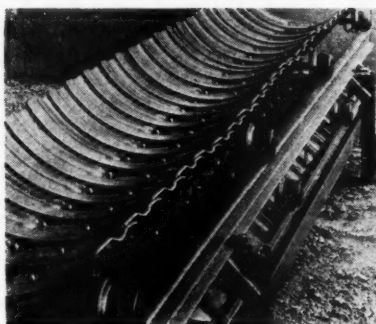
Previously manufactured in Germany only, the design of the conveyors has satisfactorily resolved the problem of producing simple steel conveyors while providing efficiency coupled with high conveying capacity and low power consumption. Their use over many years in numerous installations of varied application has proved their reliability and economy of operation.

Arrangements have been made for the manufacture of these conveyors in the United Kingdom in three sizes. The largest model type W.S.10 having pans 22 in. wide, the type W.S.20 pans 13 in. wide and the type W.S.30 pans 9 in. wide. For purpose of comparison the output of the W.S.10 is similar to that of a 42-in. wide troughed rubber belt operating at the same speed, the W.S.30 comparing with an 18 in. rubber belt under similar conditions.

The conveyors consist of a series of overlapping curved steel pans attached each to the other by a centrally positioned steel linked driving chain, which is located below rail level. Brackets are fitted to the steel pans at given intervals. To these brackets are

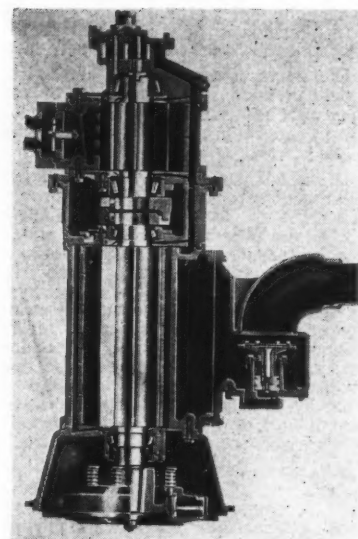
bolted spindles carrying rollers mounted on anti-friction bearings, with special seals eliminating re-greasing. These rollers move with the pans on a track which is made from standard narrow gauge rails; the central location of the driving chain together with the overlapping of the pans protect it from damage by the material being conveyed.

The curved design of the steel pans allows a high bulk carrying capacity in relation to their width; this curvature, together with the overlapping of the pans and the centrally placed driving chain, permits the conveyors to operate round bends in either direction. The change from straight to curved operation requires only a given number of swivel links in the driving chain and the bending of the rails to give the necessary curve. The conveyors operate with materials such as dry sand up to gradients of 32 deg.



The conveyors are operated by electric motor through a worm drive, transfer box and final reduction by chain and sprocket to the sprocket shaft of the head unit. The tail unit incorporates an idler sprocket with adjustment for tensioning the driving chain. The rails and support bridges are made in suitable lengths for easy handling, permitting quick transfer of the whole conveyor unit from one location to another and presenting an easy means of lengthening or shortening the installation as desired. With the exception of special installations no permanent foundations are required; all that is necessary is a reasonably level site which in quarries or on open cast sites can be obtained by means of a bulldozer. In deep mines they can follow the existing contours of the galleries or tunnels. For all practical purposes there is no limit to the length of the conveyor as intermediate drive units and additional sections can be added as and where required.

Their possible applications in coal and



metalliferous mines, and in quarries or open cast operations, are obvious.

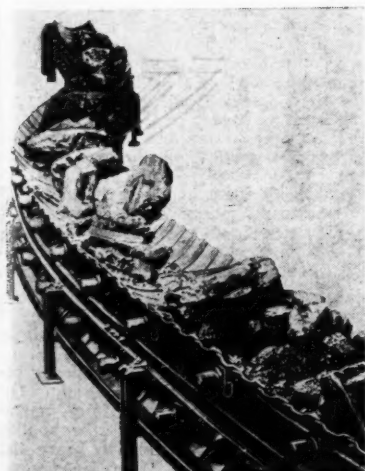
POWER VANE COMPRESSION

Radical changes have been seen in mining and civil engineering practice as a result of the introduction of the airleg and tungsten-carbide tipped steels in the past few years. Now with the introduction of rotary Power Vane Compressors into the field of air compression equipment, a further revolution is gradually taking place.

The principles involved in this type of air compression are extremely simple. A shaft or rotor carrying a number of radial vanes rotates eccentrically in a cylindrical chamber. As the shaft rotates, the vanes, which are kept out against the walls of the chamber by centrifugal force, recede back into slots in the rotor as the contour of the casing changes. In this way, sections of rapidly decreasing volume are created, air being admitted at the largest sector and released at the smallest. No inlet valves are required as air is admitted to a sector while it is still increasing and the sector is sealed as soon as it has passed the inlet port.

Better utilization of power has also influenced types of power units and in the field of prime movers, Rolls-Royce and Perkins have contributed diesel power packs particularly suited to this type of operation.

The Rolls-Royce engine C6NFL which powers the Consolidated Pneumatic Tool Co.'s model 600 RO2—a unit delivering 600 c.f.m. F.A.D. at 100 p.s.i.—is a six-cylinder, four-stroke, direct injection, liquid-cooled engine. The C4NFL power unit, driving C.P.s model 365 delivering 365 c.f.m. at 100 p.s.i., differs from the C6 in having a capacity of 8.1 litres and in developing 110 b.h.p. and 99 b.h.p. at 1,800 r.p.m. for 12-hour and continuous rating respectively. The Perkins four-cylinder unit, the L41, of 4.42 litres capacity, developing 53 b.h.p. at 1,800 r.p.m.,



At left is shown a W.S. all-steel conveyor under load, while in the centre is the belt structure. Above right, a sectional view of the C.P. Power Vane Compressor

powers the 175 and 120 c.f.m. Consolidated Pneumatic Power Vanes. Compression ratio in the L41 is 17½:1.

The compactness of these units has drawn attention to underground operations and in this regard the CP model 600 may be supplied with electrical drive to deliver 510 c.f.m. at 1,480 r.p.m.

The economics of carrying compressed air underground compare unfavourably with those of carrying electricity underground and producing compressed air at a convenient station. Friction losses and air leakages are the main causes of reduced efficiency and in some mines, pipe maintenance may be a substantial item. The placing of compressors at underground points as opposed to surface installations is a measure to eliminate this wastage and further economies are possible by arranging for installations to serve a level or group of levels, thus permitting selective operation.

In deep mines, where control of air temperature is important, the temperature of compressed air being used may have an important effect on working conditions. In this regard, the very much lower temperature (100 deg. F.) of air compressed by the Rotary Power Vane has been a contributory factor in its choice for several underground operations.

TANK-TRAILER CARRIES LIQUIDS AND FREIGHT

A new dual-purpose 2-wheel tank-trailer, designed and manufactured by M. F. Robertshaw Ltd., and ideally suited for Land-Rover/Jeep type vehicles, has solved the difficult problem of carrying liquids and freight simultaneously. This follows the principle used in aircraft design to save space by storing fuel in the unused wing space by turning the inside of the trailer chassis into a tank. Chassis space in trailers is rarely used to good advantage, and by reducing the capacity of the freight portion of the new tank-trailer by only a few per cent as compared with a conventional trailer of similar size, it has been found possible to accommodate up to 100 galls. of liquid



The Robertshaw 2-wheel tank trailer

The range of application in the mining industry is wide, including, for example, water and cement to make concrete, fuel and equipment for exploration work, and water, pumps, and other equipment for fire-fighting and similar uses. Formerly, these and many other applications required a tank-trailer to carry the liquid and an ordinary trailer for the remainder of the equipment.

Three types of trailer are available, the standard model Mark 1 having a tank-chassis capacity of 100 galls. and a freight capacity of approximately 1,500 lb. The Freighter Mark II, which is basically a freight-trailer of the same tank-chassis construction, takes 50 galls. of liquid and 2,000 lb. of freight, and

the Tanker Mark III, again of the same dual-purpose design but basically a tanker, takes 200 galls. of liquid and 500 lb. of freight. Efficient springing allows the trailers to be used over the roughest country, and another important feature is that they are amphibious and can be floated across streams or other water barriers.

MOVING AND SPOTTING WAGONS

Equipment for moving and spotting the new standard railway wagons has been installed at Calverton colliery in the East Midlands Division. The design is a modification of existing spotters in use at the colliery which are not suitable for the new 40-ton hopper-bogey type wagons and the new 24½-ton vacuum braked wagons. The new spotting equipment has a very low initial height, thus allowing it to clear the brake gear on the new wagons when it is in the retracted position. It incorporates an axle-counting device which is essential when wagons of mixed types are to be dealt with.

The design consists of a bogey which is hauled backwards and forwards on separate flat tracks installed between the rails of the main railway track. Haulage is by an electric winch through wire ropes. The spotter arms, designed to allow engagement on wagon axles of varying distances above the rail level, are connected by link bars to the sliding draw bar to which the haulage ropes are fixed. A forward pull on this bar raises the arms to engage in the wagon axle; a reverse pull lowers the arms to enable the bogey to be drawn back under the next wagons ready for the next pull. A counting device is an integral part of the bogey, ensuring that the arms engage on a pre-determined axle.

The spotter is under the control of the wagon lowerer for forward movement only. When it is required to move wagons forward a push button is operated which starts the electric winch. When the spotter reaches the limit of its forward travel it is automatically reversed through the electric circuit. On the reverse travel, after four wagon wheels have been counted, the spotter stops and is again ready to move the wagons forward.



The wagon spotter during the forward pull

MINING MISCELLANY

A report from Wellington, New Zealand, states that Rio Tinto have applied for uranium prospecting licences at Buller Gorge.

It has been officially announced that, in future, prospecting for diamonds may be carried out in Nigeria if a special licence is obtained.

A study in a leading Turkish economic journal has revealed steady progress in the coal industry since 1953. Production, which was estimated at 7,000,000 tons in 1956, is expected to reach 10,000,000 tons in 1960.

A gift of £20,000 has been made by Shell Petroleum Co. to assist in the establishment of a Laboratory in Sedimentology in the Department of Geology, University of Reading.

Several high officials of the Kaiser and Chemical Corporation visited Jamaica recently to inspect bauxite mining operations on the island, including those of the wholly-owned subsidiary, Kaiser Bauxite.

U.S. investors are reported to have put up \$100,000 to erect a factory at Eilat in Israel for the production of natural abrasives, quarried from nearby deposits.

The Fuji Iron and Steel Co., one of the seven leading steel mills in Japan, has contracted to buy 120,000 tons of iron ore from Brazil during the current year. The contracted price is \$13.90 f.o.b. Brazilian ports for 68.5 per cent ore from Itapira mine.

Explorers Alliance, of Toronto, plans to spend \$3,000,000 on minerals exploration and development work in three counties of Eire. The company is already exploiting silver, zinc and copper deposits at Glendalough and in County Waterford. Financing of the new projects has not yet been completed, but it is hoped to begin operations in 1958.

The Prime Minister of Victoria, Mr. Bolte, has announced the appointment of an advisory committee to plan exploration for base metals in the State. He said mining experts believed that Victoria might have substantial unexplored deposits of economic minerals, including base metals.

The Sierra Leone Development Co. plans to expand its output of iron ore concentrate from the Marampa mines over the next two years, reports Barclays Bank DCO *Overseas Review*. The scheme will cost nearly £1,000,000 and should be working properly by 1959. It will bring output of iron ore up to 1,500,000 tons per year.

A Parliamentary Commission has recommended increased control over the export of vital Canadian resources. It has recommended, *inter alia*, that the

Government hold its present tariff line, but continue the re-examination of tariffs to achieve simplicity and flexibility; and that a system of export controls on minerals and metals through federal export permits be set up.

By July this year extension of the Mocamedes Railway to a point 400 miles from the port of Mocamedes will make possible the exploitation of iron ore deposits at the Cassinga Mines in Angola, from which some 500,000 tons annually will be available for export. Nearly £2,000,000 will be spent on an extensive overhead conveyor system at Mocamedes to handle the ore.

The biggest mining undertaking in Cyprus, the American-owned Cyprus Mines Corporation, has been granted an Award of Honour by the National Safety Council of the U.S. for its outstanding improvement in safety during 1955. The award was officially presented at a ceremony held in the company's machine shop building at Xeros and attended by over 400 employees. The ceremony was repeated at the Mavrouni mine later in the day.

New light has been thrown on the origins of Cyprus's copper industry by the discovery in the Late Bronze Age town-site of Enkomi, near Famagusta, of extensive workshops dating back to the 13th Century B.C. In these workshops have been found traces illustrating all the processes of copper working—crushing of the ore, smelting and casting. Other evidence of intensive copper-working activity was afforded by the discovery of an impressive deposit of copper slag in several successive layers dumped outside the workshops in what had evidently been an open yard.

A law introducing a new tax on imported products in order to open up a new source of public revenue will become effective in Turkey on March 1. Originally it was intended to levy this new tax on imported luxury goods only, but the list has been widened. It now includes gypsum, sulphur, calcium, iron and steel, copper, nickel, aluminium, magnesium, lead and zinc, as well as timber and timber manufactures, rubber and rubber manufactures, and railway rolling stock. Dues range up to 40 per cent of the value and will have to be deposited by importers at the Turkish Central Bank.

Consolidated Virginia, the "Big Bonanza" of the Comstock Lode in its heyday, is planning an extensive campaign of rehabilitation, writes our correspondent in the Western United States. First step is drilling to determine the mineralization of an area which was not mined in the days when only high grade was sought. Considering the history of the Comstock it is reasonable to expect that there is a large tonnage available, much of which would be considered high grade under present condi-

tions. Con-Virginia had such a plan in mind visualizing an open pit operation, when Order L-208 stopped all gold mining in October, 1942. The company is also diversifying its interests and is negotiating for purchase of Hampton Mining Co., a Utah corporation, which operates in chrome, manganese and gold and holds an interest in a large Panama oil concession.

A progress report issued by the Emerald Isle Mining Co., a subsidiary of Can-Erin Mining Corporation, of Toronto, states that satisfactory results continue to be received from analysis of samples from the Berehaven group of copper mines. Drilling continues to encounter good copper intersections with values of up to 9.44 per cent copper in the latest holes completed. At the Mountain Mine, where dewatering is still in progress, one section which was cut returned an average of 9.45 per cent copper. Elsewhere, six mineralized sections also gave good returns. At the old Coome mine one hole averaged 9.14 per cent copper. In the Kealogue mine area 7.1 per cent copper was returned.

Compania Estanifera do Brasil is installing additional plant, costing U.S. \$1,000,000, at the Volta Redonda works to refine low-grade concentrates, writes our Brazilian Correspondent. The modified electrolytic process adopted is expected to reduce evaporation losses to less than 5 per cent, enabling the company to sell below the price of national tin. Of 36 cassiterite deposits now being worked in Brazil, 25 are concentrated in the Sao Joao del Rei region of Minas Gerais. In 1955 mine production amounted to 285 tons. Due to wasteful operation of the furnaces much of the output of the mines is unsaleable, owing to impurities and only 400 tons of concentrates are marketed annually. D.N.P.M. is now investigating conditions on behalf of the mining companies, measuring and analysing reserves and installing improved plant to eliminate associated minerals and ensure maximum purity. In addition to cassiterite some of the Sao Joao del Rei deposits contain tantalite, columbite and limonite. Cia. Estanifera is associated with the state-owned Cia. Siderurgica Nacional, which absorbs practically all the tin produced in Brazil and is now obtaining cassiterite from the recently-discovered deposits in the Amapa Territory, as well as from Minas Gerais.

PERSONAL

Dr. R. A. Mackay will be leaving next week on a short business trip to South Africa.

Mr. C. J. Burns has been appointed a director of Rhodesian Corporation Ltd.

Major-General W. W. Richards has resigned from the board of Kwahu Mining Co. (1925) Ltd. in order to devote more time to his other interests. Mr. C. J. Burns has been elected a director.

Mr. M. E. Rich has joined the boards of Blyvooruitzicht Gold Mining Co., Harmony Gold Mining Co. and Loraine Gold Mines. Lt.-Col. R. L. Broad has left the boards of these companies.

Mr. Maurice R. Bridgeman, Mr. Percy T. Cox and Mr. John McVean Luard have been appointed directors of the Trinidad Petroleum Development Co. Mr. Louis A. Hart and Mr. Kenneth E. Beart have resigned from the board.

Mr. R. F. St. G. Lethbridge will shortly join the Rio Tinto group on relinquishing his private consulting practice. It is intended that he should succeed Mr. E. G. Lawford, who is technical manager in London, on his retirement later in the year.

Mr. O. V. G. Hoare has resigned from the board of Gold Coast Main Reef Ltd. Mr. C. J. Burns and Mr. G. Houghton Brown have been elected directors.

Mr. J. F. Ince has been appointed a director of East Rand Consolidated Ltd.

Brig. S. K. Thorburn has joined the board of the Coronation Syndicate Ltd. Mr. F. D. C. Smith has left the board.

Mr. H. A. Mackay has been elected chairman of Wit. Extensions, Ltd. Mr. M. E. Rich has been appointed director and Lieut.-Col. R. L. Broad has left the board.

Mr. R. C. Atherton, Lord Kirkwood and Mr. M. I. Freeman have been appointed directors of Imperial Smelting Corporation Ltd.

At the annual general meeting, held on January 8, Mr. A. J. Connelly was re-elected chairman of the Association of Vermiculite Exfoliators. The executive committee was established as follows:—Mr. J. R. Bartlett (of J. M. and J. Bartlett Ltd.), Mr. A. E. Cleaver (of A. R. and W. Cleaver Ltd.), Mr. J. Warren Hitchens (of Dupre Vermiculite (Exfoliators) Ltd.), Mr. W. H. N. Cooper (of the Iron and Marble Co. Ltd.), Mr. C. E. Bickerdike (of William Kenyon and Sons (MetalMica) Ltd.) and Mr. L. L. Slack (of L. Slack and Son Ltd.). The association, either directly or through individual members, is anxious to co-operate to the fullest extent with all interested in the material. The numerous plants operated by members are well sited to provide full service and economic delivery in all parts of the U.K.

Mr. M. I. Prichard, deputy managing director of F. Perkins Ltd., is visiting the U.S. for top-level talks with American industrialists and to obtain first-hand knowledge of dollar-earning markets. The company exports 70 per cent of its diesel engines, either directly or indirectly, to 143 countries including the U.S. and Canada. Mr. D. F. W. McNair, the export sales manager, who has flown nearly 150,000 miles on the company's business since 1950, will spend four weeks in the U.S. and will also visit Canada.

Mr. G. A. Hannah, managing director of Pegson Ltd., has succeeded Mr. E. S. Everitt, managing director of Ruston-Bucyrus Ltd., as president of the Federation of Manufacturers of Contractors' Plant. Mr. B. N. Jolly, director and general manager of E. Boydell and Co. Ltd., has been appointed vice-president.

Mr. W. H. McFadzean, chairman and managing director of British Insulated Callender's Cables Ltd., left London on January 19 by air on a round-the-world tour. He expects to return to Britain shortly before the end of March. During the tour he will visit B.I.C.C. group organizations, Pakistan, India, Singapore, Australia, New Zealand and North America. The group's direct and indirect exports from Britain, together with the turnover of B.I.C.C. group companies overseas, now amounts to some £55,000,000 per annum.

The Second International Congress of Surface Activity will be held in London from April 8-12, 1957. A number of the papers to be presented will deal with flotation, adhesion and absorption problems, which are of importance to mineral dressers. Anyone wishing to take part in the Congress should contact Lt.-Col. F. J. Griffin at 14 Belgrave Square, London.

The 1957 "Minibition", organized by the Purchasing Officers Association and held concurrently with its national conference, will take place at the Hotel Metropole, Folkestone, from September 26 to 28. Further information may be obtained from the secretary of the association, Wardrobe Court, 146a Queen Victoria Street, London, E.C.4.

The next Mining Qualifications Board examination for First and Second Class Certificates of Competency as managers and under-managers of mines will be held on May 21, 22 and 23, 1957, at Glasgow, Sunderland, Doncaster, Wigan, Cardiff and Stoke-on-Trent. Candidates for Limited Certificates of Competency as managers and under-managers of stratified ironstone mines will attend at the Doncaster centre. The Mining Legislation examinations for Mechanical Engineer's Certificates, Electrical Engineer's Certificates, Mechanic's Certificates Class I and Electrician's Certificates Class I will be held on May 21. The written part of the examination for Certificates of Qualification as Surveyors of Mines will be held on May 22 and the Oral and Practical examinations in July. Intending candidates should apply after February 25 for the necessary forms, stating whether they have previously attended an examination for any of these certificates. Completed applications should be returned as soon as possible and should be received not later than March 27. Letters should be addressed to the Secretary, Mining Qualifications Board, Ministry of Power, Thames House South, Millbank, London, S.W.1.

On January 28, at the Tea Centre, Lower Regent Street, London. Professor Sir Albert Richardson, Past President of the Royal Academy, will open an exhibition of some of the largest colour photographs ever shown in Europe. They were made by Adolf Morath for the purpose of showing to the world what Britain does and how she does it.

A brochure showing examples of this photographer's outstanding colour photography of industry has recently been produced.

Two further regional stockists and agents have been appointed by Compo-flex Co., Ltd., of London, to handle Wyrem dust extraction and ventilation hose. Smith Bros. Asbestos Co. Ltd., of Leicester, will cover the counties of Leicester, Derby, Nottingham, Northampton, and Rutland. Rubberlast (Britain) Ltd., of Leeds, will deal with the East and West Ridings of Yorkshire. There are now six regional stockists, covering most of Britain.

The International British Plastics Exhibition and Convention will be held at Olympia, London, from July 10-20, 1957.

The Anaconda Sales Co. has been holding a 10-day session with its European sales representatives for discussion of current business conditions abroad and for the formulation of future sales plans.

CONTRACTS AND TENDERS

Thailand

International Co-operation Administration (I.C.A.), Project Implementation Order No. 93-12-108-9-60361 (Invitation No. Mining-TTEC-41) calls for gloves, wire rope, clamps, load binders, drill collar, bits, reaming shells, core barrels, overshot, junk basket, and chain tongs. Bids should be sent to the Thai Technical and Economic Committee, 962 Krung Kasem Road, Bangkok, Thailand. Closing date, 15/2/57.

B.O.T. Ref.: E.S.B./1266/57/I.C.A. Telephone enquiries to Chancery 4411, extension 360.

India

Tender No. DEV/H-1/1-G. Power shovels, dumpers, tractors, road rollers, mobile cranes and tractor trailers. Tenders will be opened on 31/1/57 at the office of the Managing Director, National Coal Development Corporation (Private) Ltd., Alamin House, Buty Road, Ranchi. A copy of the tender documents may be inspected in Room 805, Lacon House, Theobalds Road, London, W.C.1, after which it will be available for loan to U.K. firms in order of receipt of applications. Photo-copy sets can be purchased for 7s. B.O.T. Ref. E.S.B./32242/56. Telephone enquiries to Chancery 4411, extension 738 or 771.

An order for eight main-line diesel-hydraulic locomotives for the Sierra Leone Railway has been received by Hudswell, Clarke and Co. Ltd., of Leeds. Each locomotive is to be fitted with a Paxman diesel engine of the "Hi-dyne" (constant horse-power) type, together with a Vulcan-Sinclair transmission unit. This type of locomotive has been developed by Hudswell, Clarke and Co. during the last four years under the name "Enterprise". The value of the contract amounts to over £200,000. The company has recently supplied a number of other diesel locomotives to the Sierra Leone railway.

Sheppard and Sons, of Bridgend, has received a further dollar order from the American Smelting and Refining Co. It is for a third zinc slab-casting machine, valued at over £11,000.

Metals and Minerals

Nickel Flies Ahead

The Joint Defence Production Committee has revealed to the U.S. Congress that increasing amounts of nickel are expected to replace aluminium and titanium for the "skins" of supersonic aircraft. The report cited the Bell X-2 rocket plane as a forerunner of the latest type of aircraft to be used extensively by the air force. It is constructed entirely of nickel-bearing stainless steel and K-monel, an alloy containing 65 per cent nickel. Production of this rocket aircraft is expected to increase the amount of nickel pre-empted by the Defence Department.

A new high temperature nickel alloy containing about 1 per cent titanium is expected to find wide use in highly stressed parts of jet engine combustion systems. Claimed to have excellent oxidation resistance at temperatures up to 1,600 deg. F., it may find future application in airframe parts of planes to be used for flights at speeds in the region of the thermal barrier.

A major deposit of nickel has been discovered near Bindura in Southern Rhodesia. The reef is said to be 600 ft. wide and originates in a kopie heavily impregnated. It has been traced for several miles.

The Premier of Quebec, Mr. Maurice Duplessis, has announced the discovery of a very large deposit of high-grade nickel ore some 250 miles north of Schefferville, the ore mining centre in the far-northern district of Ungava. It has been stated that Inco is prepared to spend \$5,000,000 on further exploration and to invest \$100,000,000 in developing the ore-body, which is described as one of the richest in Ungava. A second group, which is credited with the discovery of the new deposit, is also reported to be interested in the venture.

NEW MANGANESE PLANT

Strategic - Udy Metallurgical and Chemical Processes, Ltd., a subsidiary of the Strategic Materials Corporation, has formally opened its new prototype electric furnace plant for low-cost processing of low-grade manganese and other metallic ores (*vide The Mining Journal*, 26/10/56, p. 497). Officials stated that the opening performance of the prototype plant to date had far exceeded expectations.

ALUMINIUM SALES PROMOTION

Alcoa is convinced that a reasonable use of the aluminium building products now available could put 1,200 to 2,000 lb. more aluminium into a new home. In addition to sales promotions already planned on awnings, screens and screening and aluminium surface insulation, promotion effort will also be placed on other existing residential aluminium applications such as windows, combination storm sashes and doors, siding, and many others.

A vast new market for aluminium in the manufacture of cans for a wide variety of consumer and industrial uses is predicted by Mr. Victor Muscat, president of Victor Metal Products Corporation and chairman of Aluminium and Chemical Corporation, who also believes that the collapsible metal tube industry will benefit from major growth in both old and new markets. Next month Aluminium and Chemical will start construction of a new plant for the manufacture of the basic materials from which aluminium cans and toothpaste tubes will be fabricated.

Alcoa's second annual survey has revealed that, exclusive of consumption in the manufacture of replacement parts and auxiliary uses such as deoxidation of steel and for alloying other metals, America's average 1957 model passenger automobile is using 10 per cent more aluminium than last year. It is estimated that new car manufacture will require approximately 123,750 tons of aluminium during 1957—an all-time record.

Legislation to suspend duties on the importation of aluminium and aluminium alloys into the U.S. has been introduced in Congress. It is expected to be passed without opposition. At present there is a tariff of 1½ c. per lb. on aluminium shipped into the U.S.

Another bill before Congress seeks to amend the Internal Revenue Code of 1954 to provide a 23 per cent depletion rate for bauxite, if from deposits in the Western Hemisphere.

Reports from Budapest indicate that the aluminium industry — one of Hungary's chief export industries—has been almost completely closed down. Shortage of electric current has forced the bauxite mines to close and is also making it impossible to convert existing bauxite stocks into aluminium. It is expected that, even when conditions return to normal, it will take the aluminium industry six months to get going again.

U.S. PLATINUM PRICE CUT

The two leading U.S. refiners have reduced their officially published prices for platinum by \$5 an oz. to a new level of \$98 an oz. in bulk quantities and by \$4 to \$101 for retail lots. The decline stems from increased imports and higher offerings to the U.S. from overseas, believed to originate largely in Russia.

It is not expected that the reduction will materially affect the price of the metal in the U.K. The U.K. price remained unchanged at £34 per troy oz. when the U.S. price was raised a few months ago and it is still slightly below the current U.S. price. The fall in the U.S. price has also been largely discounted by the free price of platinum in the U.K., which fell from around £37 10s. a few months ago to the current quotation of around £36.

WOLFRAM STILL FALLING

The downward movement in wolfram ore shipment prices still continues. Though temporarily reversed following the Suez Crisis, it has been going on for several months and since mid-1956 prices have declined by some 54s. There seems to be a growing recognition that world output is tending to exceed demand, while the existence of certain quantities of East German ferro-tungsten has been an additional depressing factor.

Murex Ltd. has announced that, effective January 21, the price of British ferro-tungsten will be cut by 3d. to 14s. 10d. per lb. weight contained, while British tungsten powder 80 mesh (steel-making quality) will be cut by a similar amount to 17s. 10d. per lb weight contained.

THE SILVER MARKET IN 1956

World consumption and production of silver both increased last year, state Handy and Harman in their review of the silver market in 1956. World consumption of silver, in the arts and industries and coinage combined, is estimated at about 260,400,000 oz.—an increase of 17 per cent over 1955. Total production is placed at about 230,000,000 oz.—a gain of 4 per cent over the previous year. Eliminating U.S. coinage from consumption figures for the past five years, it would appear that production has exceeded effective demand by an average of about 12,000,000 oz. per year.

It is estimated that the arts and industries in the U.S. consumed 100,000,000 oz. of silver in 1956. Continued gains in many of the industrial uses were offset by a decline in consumption for sterling and plated ware. Industrial uses accounted for well over 50 per cent of all silver consumed in the U.S. during 1956.

For the first time since October 1955, the Treasury sold silver to U.S. consumers under the Act of July 31, 1946. Between October 17 and November 28 a total of 3,700,000 oz. were sold, equivalent to about one-quarter to one-third of the market's requirements during this period.

U.S. Treasury free stocks at December 31, 1956, amounted to 87,400,000 oz., a net increase of 62,500,000 oz. from the end of 1955, resulting mainly from returns of lend-lease silver. About 94,900,000 oz. were returned against lend-lease obligations during 1956, including arrivals not officially credited as of the year end. Of the total received the U.K. returned 59,600,000 oz.

In 1956 stability again characterized the silver market. Silver laws in the U.S. governing the purchase and sale of silver by the Treasury provided the main reason for the narrow range of price fluctuations. The Treasury buying price of 90½ c. for domestic production kept the market from going very much below this level, while its selling price to U.S. consumers limited price increases during periods of peak demand.

Handy and Harman believe that, so long as U.S. silver laws and policy remain unchanged, the silver market will continue in the pattern of the year just ended. If, however, the existing silver laws should be repealed, the Treasury would no longer be obliged to buy U.S. production and would have no authority to sell silver except at \$1.29 per oz. Under these circumstances the market price of silver would fluctuate more widely and more frequently. The view is expressed that unless there were a substantial increase in demand, the average price level would be lower.

Other than production, substantial amounts of silver in the form of demonetized coin came into the market in 1956. It is estimated that about 14,000,000 oz. were obtained from Saudi Arabian silver coin, while India received about 16,500,000 oz. in the form of Tibetan coin.

ANOTHER \$ BILLION MINERALS

The value of the U.S. minerals output in 1956 reached the new peak of \$17,300,000,000, reports the Secretary of the Interior, Mr. Seaton. It was valued at nearly \$16,000,000,000 in 1955 and \$14,100,000,000 in 1954.

The latest increase is attributed primarily to greater production. Prices for the most part were steady. The figures show an 11 per cent increase in the value of fuel output, a 10 per cent gain for non-metals, and a 9 per cent gain for metals. The biggest metal gainers were copper, lead and zinc. The general upswing was offset by falls in the production and value of such metals as chromite, gold, iron, manganese, silver, molybdenum and tungsten.

Soft coal production continued to rise, while Pennsylvania hard coal, aided by an expanding export market, "turned upward for the first time in years."

Reserves of nuclear fuel appear ample, states the report. Domestic uranium ore reserves were estimated at 60,000,000 tons as at the end of November. The percentage of prospecting done by private companies continued to rise.

Iron ore output, though down 8 per cent, was helped by a two-week extension of the Great Lakes ore shipping season.

Production of most non-metals matched the boom in the chemical, ceramic and fertilizer industries. Major gains were registered by producers of phosphate rock.

HUNGARY'S URANIUM MINES

A hold-up in the production of Hungary's uranium mines is ascribed not only to shortage of electricity, but also to the departure of Soviet experts. It was recently reported, however, that the equipment of the mines remained intact and that it had, in fact, been supplemented by new equipment delivered since October.

SILVER IN DEMAND

Leading silver suppliers in the U.S., faced with a heavy export demand, mainly from the U.K., are now asking a premium for such sales. Some domestic users are being forced to go to the U.S. Mint for any additional requirements.

The price of silver has remained steady at 91½ c. In the U.K. supplies, though not plentiful, have been adequate to meet current need and prices have been firmly held.

QUICKSILVER'S UPWARD TREND

Quicksilver remains firm in the U.K. market, with prices tending slightly upwards. This is attributed primarily to the recent tendency for demand to outstrip supply. Consumers who bought only small quantities during the past two or three years, having built up stocks during the Korean War, are in

the market again. Among them are India and other Far Eastern countries, which have now become more active. Much silver has also been bought for chlorine plants, which always require considerable quantities when first brought into operation. Due to the rise in consumption the spot position of the U.K. has become relatively tight. Moreover, fresh supplies are coming forward more slowly from producing countries, due largely to the fact that some mining companies have sold fairly large quantities for forward delivery. The harder tone in the quicksilver market is therefore expected to persist during the next two or three months.

COPPER · TIN · LEAD · ZINC

COPPER ON THE MOVE

Copper showed signs in the past week of moving out of the doldrums in which it has lain for the past few months. Pricewise there is nothing to substantiate this claim; copper from the big producers still costs 36 c. per lb. and from the customs smelters 35 c. per lb.; the export figure is still around 34½ c. per lb. However there has been a slight weakening in the price of No. 2 scrap which in the past week dipped below 28 c.

The feeling of change is, nevertheless, quite marked. Brass mills have reported a modest improvement in orders. The improvement is only modest and it has lasted for only a fortnight but it is very much more than brass mills have been able to report for many months. One brass mill operator is reported as saying that the movement, if continued, would raise the volume of output to 80 per cent of the level of the first half of 1956 in a matter of a few weeks; recently the output has been no more than around 65 per cent. The brass mill operators have been so cautious recently in their forecasts that these estimates may be taken at least at their face value and possibly more confidently even than that.

The other sign of change is a growing feeling that the price in the United States is due for another fall. This feeling, as much as anything else, was responsible for the decline in the London Metal Exchange quotation. It must be said, however, that the possibility of the big producers lowering their figure of 36 c. is not strong so long as the custom smelters are able to dispose of their output at no more than one cent less. The first move to be looked for is therefore a widening in the spread between producers and smelters. This would not be unreasonable in the circumstances. If brass mill buying is about to become more venturesome, this is the time to encourage it by a price cut.

The Copper and Brass Research Association is reported to be preparing a brief for submission to the Office of Defense Mobilisation asking for restrictions on imports of brass tubing. The claim is apparently based on the old reasoning that cheap foreign labour is involved and, in this instance, West Germany is named as the most challenging competitor. Even if the move were to succeed (and this at the moment seems doubtful) the procedure would be lengthy, and a more effective way of

encouraging American brass mills to cater for such demand as presents itself would be to lower the price of copper. Fabricators have for some time complained of the price spread between the American quotation and those available in other, particularly European countries.

Finally, the December statistics of the copper producers emphasized the mounting level of stocks which are now beginning to look a little bit oppressive. At the end of December, 1956, American stocks were 120,635 tons against 116,516 at the end of November and only 61,544 tons a year ago. Foreign stocks were also up from 228,665 tons to 232,976 tons against 159,777 a year ago.

Taking the year as a whole, new copper records were made with American production in 1956 reaching 1,271,224 tons of which 1,131,812 tons were from mines. Production of copper outside the States in the year reached 1,742,563 tons of which 1,729,611 tons were from mines.

IS TIN TOO CHEAP?

Tin has moved hesitatingly lower in New York where the spot price for Straits metal is now 102.62 c. per lb. Trading on the whole has been light but occasional bursts of buying have influenced the market which has otherwise taken its cue from London. It would seem that the strike at the Butterworth smelter is not being taken very seriously yet it is probable that the price in New York would have gone below a dollar had the strike not taken place, so that in a negative sense the incident may have been influential. There is no news of the dispute being brought to an end.

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Sir Douglas Waring, who represents tin interests on the Federal Legislative Council, is reported as saying that the time is approaching for an upward revision of the world selling price of tin, and added that Malaya might not be able to continue her present level of output unless the price were to rise. This statement may be taken as a pointer to the next meeting of the International Tin Council when it is expected that a vote will be taken on whether the present price tranches should remain or not.

Meanwhile output in Malaya in 1956 established a new post-war record for the second consecutive year. In 1956 it reached 62,295 tons—the highest since 1940 when the all-time record of 80,000

tons was set up. During the year a drop in production dredges emphasized the difficulties that the big companies were having in finding new tin-bearing land, but the production of gravel-pump hydraulic and open-cast sections increased during the year.

Other year-end totals for the main producing countries, are as follows: The Congo 14,533 tons (15,028), Indonesia, 30,053 tons (33,368), Bolivia, 26,500 tons estimated (27,921). Production from the four main producing areas is thus down on the year by about 4,000 tons.

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The Straits New York conference has announced an increase in freight rates on shipments of tin-in-slabs from Malayan base ports to American, Atlantic and Gulf ports with effect from February 1.

The rate is up by U.S. \$6 to \$68 per long ton.

LEAD AND ZINC QUIET

Business in both lead and zinc has been quiet in the past week in the United States. Prices are unchanged at 13.50 c. per lb. for Prime Western grade, and 16 c. per lb. for New York lead. The only feature in demand has been a rather surprising lightness in the buying of Prime Western grade for galvanizing. In view of known levels of activity in the steel industry this has been rather puzzling. However, the market is comfortably maintained by stockpiling. The barter programme is about to start again, and it is being reported that about 8,000 tons of Belgian high-grade zinc were on offer against agricultural produce. At the same time G.S.A. announced an invitation for domestically-mined lead and zinc to be offered by January 3 for delivery by March 15.

How long all this stockpiling will continue is uncertain. President Eisenhower in his budget message to Congress has forecast a reduction in strategic stockpiling, but a very big increase in the volume of barter deals for strategic materials value of the \$36,000,000 being arranged (these are expected to be three-times the in the current year). It should be noted, however, that the budget under discussion covers the period June 1957-June 1958 so that no immediate cuts will follow from this statement. Furthermore the overall drop in stockpiling is only to be expected since goals for many materials have been completed, or are nearing completion. A cut in the overall figure need not, however, involve a cut in the buying of any specific material. But it is significant that important members of the lead-zinc mining industry have been meeting administration officials in Washington for discussion on a long range support programme for the industry depending on some other technique than stockpiling. As a support device, stockpiling is so inefficient and expensive that it would be surprising if some new programme will not have been devised by midsummer.

The London Metal Market

(From Our L.M.E. Correspondent)

During the past week trading on the Exchange has been on the quiet side, but at the same time with the exception of copper, values generally have been well maintained.

The statistical position of copper is a factor contributing to the decline in prices, and with stocks accumulating in the U.S. a price reduction by the domestic producers from the present 36 c. per lb. level would appear to be inevitable before long, unless as an alternative an adjustment is made to their production

programme. Apart from these considerations, business conditions generally are quiet, with European demand still influenced by the oil shortage and the prospect of an improved overall supply position during the current year.

The strike at the Penang smelter of the Straits Trading Co. continues, and this, together with a reduction in the U.K. warehouse stocks of some 150 tons, has no doubt contributed to a widening in the backwarrant to fully £25 per ton. Demand has been satisfactory of late, but under present conditions there is little reason to expect any marked increase in the immediate future. On Thursday morning the Eastern price was equivalent to £782½ per ton c.i.f. Europe.

The Board of Trade announced on Wednesday the method of implementing the intention of the British government to run down stocks of certain strategic materials by stating that they would sell 30,000 tons of lead for delivery over a period of nine months beginning in March. Some 4,000 tons will be disposed of by open tender, whilst the balance will be offered back to the original suppliers or agents. The market reacted by a matter of only 10s. per ton to this statement, no doubt bearing in mind the definite news that the U.S. government was prepared to continue to barter surplus agricultural products for foreign lead.

This would appear to indicate a period of stable prices although the market is obviously dependent to a great extent on the future trend of industrial production and demand. This barter programme will apply also in the case of zinc, and in view of this the tight supply position which has existed in Europe for some months, as has been evidenced by the maintenance of the backwarrant on the Exchange seems likely to continue.

Closing prices and turnovers are given in the following table:—

LONDON METAL AND ORE PRICES, JANUARY 24, 1957

THE WEEK ON THE L.M.E.

| | January 17 | | January 24 | |
|--------------------|------------|---------|------------|---------|
| | Buyers | Sellers | Buyers | Sellers |
| COPPER | | | | |
| Cash | £268 | £268½ | £262½ | £263 |
| Three months .. | £267 | £267½ | £261½ | £262 |
| Settlement .. | £268½ | | £263 | |
| Week's turnover .. | 5,900 tons | | 6,700 tons | |
| LEAD | | | | |
| Current ½ month .. | £116½ | £116½ | £115½ | £115½ |
| Three months .. | £114½ | £114½ | £113½ | £114 |
| Week's turnover .. | 1,375 tons | | 2,550 tons | |
| TIN | | | | |
| Cash | £787 | £788 | £795 | £797½ |
| Three months .. | £773 | £774 | £771 | £772 |
| Settlement .. | £788 | | £797½ | |
| Week's turnover .. | 440 tons | | 525 tons | |
| ZINC | | | | |
| Current ½ month .. | £103½ | £104 | £103½ | £104½ |
| Three months .. | £99 | £99½ | £99½ | £99½ |
| Week's turnover .. | 4,600 tons | | 3,050 tons | |

METAL PRICES

Aluminium, 99.5%, £197 per ton
Antimony—
English (99%) delivered, 10 cwt. and over £210 per ton
Crude (70%) £200 per ton
Ore (60%) bases 23s. 6d./24s. 6d. nom. per unit, c.i.f.
Arsenic, £400 per ton
Bismuth (min. 1 ton lots) 16s. lb. nom.
Cadmium 12s. 0d. lb.
Cerium (99% nett), £13 18s. lb. delivered U.K.
Chromium, 7s. 3d. lb.
Cobalt, 19s. lb.

ORES AND OXIDES

| | |
|--|----------------------------------|
| Bismuth | 30% 5s. lb. a.i.f. |
| .. .. . | 20% 3s. 3d. lb. c.i.f. |
| Chrome Ore— | |
| Rhodesian Metallurgical (semifriable) 48% | £17 8s. 0d. per ton c.i.f. |
| .. Hard Lumpy (45%) | £17 8s. 0d. per ton c.i.f. |
| .. Refractory 40% | £12 15s. 0d. per ton c.i.f. |
| .. Smalls 42% | £16 5s. 0d. per ton c.i.f. |
| Baluchistan | £18 15s. 0d. per ton c.i.f. |
| Columbite, 65% combined oxides, high grade | 185s./197s. 6d. per unit |
| Fluorspar | |
| Acid Grade, Flotated Material | £22 per ton ex. works |
| Metallurgical (75/80% Ca F ₂) | 151s. 6d. ex. works |
| Lithium Ore— | |
| Petalite min. 3½% Li ₂ O | £8-£10 per ton f.o.b. Beira |
| Lepidolite min. 3½% Li ₂ O | £8-£10 per ton f.o.b. Beira |
| Amblygonite basis 7% Li ₂ O | £28-£32 per ton f.o.b. Beira |
| Magnesite, ground calcined | £28 0s./£30 0s. d/d |
| Magnesite Raw (ground) | £21 0s./£22 0s. d/d |
| Molybdenite (85% basis) | 8s. 5d. nom. per lb. (f.o.b.) |
| Titanium Ore— | |
| Rutile 95/97% TiO ₂ | £80/£85 per ton c.i.f. Aust'n |
| Ilmenite 52/54% TiO ₂ | £11 per ton c.i.f. Malayan |
| Wolfram and Scheelite (65%) | 205s./210s. per unit c.i.f. |
| Manganese Ore Indian | |
| Europe (46-48%) basis 155s. freight plus 15% surcharge | 140d.-150d. nom. per unit c.i.f. |
| Manganese Ore (43-45%) | 115d. nom. per unit c.i.f. |
| Manganese Ore (38-40%) | 110d. nom. per unit. |
| (including duty) | |
| Vanadium— | |
| Fused oxide 90-95% V ₂ O ₅ | £12½-£13½ per unit c.i.f. |
| Zircon Sand (Australian) (63-66% ZrO ₂) | £20 per ton c.i.f. |

Germanium, 99.99%, Ge.kilo lots 3s. 4d. per gram
Gold, 249s. 2d.
Iridium, £27/29 oz.
Lanthanum (98/99%) 15s. per gram
Manganese Metal (96%-98%) £310
Magnesium, 2s. 5½d. lb.
Nickel, 99.5% (home trade) £600 per ton
Osmium, £24/27 oz. nom.
Osmiridium, nom.

Palladium, £8 0s./£8 10s. oz.
Platinum U.K. and Empire Refined £34 oz.
Imported £35/£35½ nom.
Quicksilver, £84 10s./£85 ex-warehouse.
Rhodium, £42. oz.
Ruthenium, £15/£17 oz.
Selenium, 85s. nom. per lb.
Silver, 80½d. f.o.z. spot and 80½d.
Tellurium, 15s./16s. lb.

Mining Finance

Southern Rhodesia's Largest Gold Producer



General view of the Cam and Motor mine

A few years ago the Cam and Motor Gold Mining Company—Southern Rhodesia's largest gold producer—had to decide whether to accept the fact that the mine had a foreseeable end to its life, or to embark upon a substantial capital expenditure programme under which development would ultimately be extended to 10,000 ft.—a project which would rank amongst the world's deepest mining operations.

After due consideration, it was decided to go ahead with the development plan and, in addition, to expedite the opening up of its neighbouring property, the Pickstone Mine. This involved total expenditure of some £950,000 of which £310,000 still remains to be spent. Much of this sum was met from Cam and Motor's own resources, but a share issue was also made in April, 1955, which raised the issued capital to £562,500 in 2s. 6d. shares from £468,750 and brought in £281,250. Yet, this did not interfere with the company's excellent dividend record and the 40 per cent rate was maintained—for the fourth successive year—on the larger capital.

During the financial year ended June 30, 1956, Cam and Motor milled 282,000 tons of ore at 6.7 dwt. per ton and earned gross working profits of £478,000. The mine's ore reserves at the year-end represented as much as seven years ahead of the mill. At Pickstone, which started operations in April, thereby completing three months only, a total of 18,985 tons of ore were milled at 4.27 dwt. per ton which yielded working profits of £14,000.

In these days of lifeless gold share markets, it is good to be able to point out an issue which has been able to resist the general pull of falling values. After touching a low point of 7s. 4½d. in 1956, Cam and Motor 2s. 6d. shares have since moved up their present level of about 8s. 3d. Now that the mine's capital expenditure programme is nearing completion and monthly development figures—in December these reached 644 in. dwt. compared with a previous average of nearer 350 in. dwt.—are suggesting that opening up work has so far been successful, previous doubts regarding the company's "life" factor are becoming a little out of date. In these circumstances, a yield of 11½ per cent from a property which has considerable long-term investment merits seems unduly high.

This is not to imply that dividends may be expected to show any immediate

or dramatic increase, for capital expenditure and amortization appropriations will absorb large sums for, say, the next two years or so. But, during this period, it is possible to look with virtual certainty for a continuance of the 40 per cent rate, and already an interim dividend of 20 per cent has been declared for the current year ending June 30, 1957.

Monthly returns for the first six months of 1956-57 show that profits have risen to £270,800 from £233,600 during the same period of the previous corresponding year. This gain, has to a large extent, been due to Pickstone's contribution which, although it has already reached its maximum milling capacity of 84,000 tons per annum, full earning power may not yet have been attained. In addition, Cam and Motor has recently discovered that accumulated slimes on its property, totalling about 3,500,000 tons, are susceptible to re-treatment. Tests have revealed the value of these deposits to be 0.5 dwt. per ton and that

extraction can be carried out at low cost. Revenue from this operation is expected to make a useful contribution to income over the next few years.

During the year 1955-56 dividends paid by Cam and Motor absorbed only £225,000 from total available profits of £398,400. And in view of the above possibilities for higher revenue, this strong financial position should eventually ensure a rise in distribution.

In common with all gold mines, Cam and Motor has constantly to grapple with rising costs which cannot be offset by a corresponding increase in the commodity price. Nevertheless, considerable strides have been made towards improving recovery efficiencies, added to which the mine's above average grade of ore means that profit margins are not—under present conditions—subject to undue pressure.

Fact and Fission

Quarterly reports for three months' operations ended December 31, 1956, have now been received from the Anglo-Transvaal, Central Mining, General Mining, and Consolidated Gold Fields groups. Only one—Union Corporation—thus remains to publish its figures, although as its mines are concerned wholly with gold exploitation, no further uranium results are outstanding.

It has long been the established practice of South African gold producers to publish their quarterly development results in terms of a notional figure known as "in.-dwt". This is obtained by multiplying dwt. of gold content by the reef width in inches. Similarly, uranium development results are to be expressed "in. lb.", a figure representing the multiplication of the uranium content by the reef width.

In order to obtain some indication as to what effect current values are likely to have on future ore reserves, it is necessary to apply a simple calculation to the in.-dwt. development figures published. In the case of gold, this consists of making a deduction in respect of "mine call factor" amounting in general to between 20 and 25 per cent and then

dividing by the mine's stoping width in inches. The resultant dwt. figure may thus be compared with the dwt. value of ore reserves. For uranium, the position does not differ materially although—as in the case of gold—it must be remembered that underground conditions vary considerably from mine to mine. In addition, uranium recovery has been shown to be less complete than that of gold.

Amongst the December quarter's uranium development values, those from the three West Wits mines—West Driefontein, Doornfontein and Blyvooruitzicht—were of particular note. All of these mines are exploiting the gold rich Carbon Leader Reef, and West Driefontein (richest in gold) with uranium development values of 12.6 in. lb. was the lowest; Doornfontein reporting 14.4 in. lb. and Blyvooruitzicht 31.0 in. lb.

By far the richest mine in uranium from the latest batch appears to be Lui-paards Vlei with development values of 83.8 in. lb. compared with West Rand Consolidated—the second richest—of 61.4 in. lb.

Harmony declared 33.5 in. lb. from uranium development while at Merriespruit, its southerly neighbour, values

were only 23.5 in. lb. Values at Virginia, however, were 40.9 in. lb. At Hartebeestfontein, in the Klerksdorp area, 34.8 in. lb. of uranium were obtained and Ellaton announced 30.9 in. lb. On the other hand, Stilfontein, also exploiting the Vaal Reef, disclosed a value of only 16.9 in. lb.

| Company | U.O ₂ Output Dec. Qtr '56 lbs. | Ore Reserves Tons (000) | Grade lb. pr. ton |
|---------------------|---|-------------------------------|----------------------|
| Anglo Vaal | | | |
| Harties ... | 130,049 | 1,682 | .744* |
| Merries ... | 4,904 | 843 | .177 |
| N. Klerks. ... | 17,625 | 250 | .348† |
| Virginia ... | 181,997 | 1,588 | .639‡ |
| Cent. Mining | | | |
| Blyvoor ... | 135,795 | 6,865 | .433 |
| Harmony ... | 111,350 | 1,846 | .644 |
| Gen. Mining | | | |
| W Rand C ... | 304,462 | 3,384 | 1.294 |
| Stilfontein. ... | 76,117 | 4,286 | .304 |
| Ellaton ... | 26,461 | 576 | .548 |

Gold Fields

| | | | |
|----------------|---------|--------|------|
| Doornfont. ... | 15,803¶ | 1,246 | .18 |
| W. Drie. ... | 22,124 | 1,438 | .21 |
| Luipaards ... | 176,891 | 644§§ | 2.27 |
| Vogels ... | 60,770 | 1,098§ | .54 |

* Excl. 734,900 tons at .778 lbs. available in slimes dams.
† Excl. 1,272,000 tons at .400 lbs. available in slimes dams.
‡ Excl. 271,600 tons at .380 lbs. available in slimes dams.
¶ Two months only.
§ Kimberley Reef.
§§ Bird Reef.

Gold results during the December quarter included an excellent showing from Blyvoor of 1,020 in. dwt. compared with 869 in. dwt. previously. Harmony's payability rose to 85 per cent from 79 per cent but values of 493 in. dwt. were little changed from the September quarter's figure of 507 in. dwt. Doornfontein's return was also excellent with payability up to 93 per cent from 87 per cent and values to 624 in. dwt. from 432 in. dwt. West Driefontein payability remained at 100 per cent and the gold content improved to 859 in. dwt. from 781 in. dwt.

Even before the flooding of Merriespruit last September, this mine's need for further money had been widely recognized. The company has now stated that further capital will have to be raised.

A view of the uranium plant at Hartebeestfontein during construction



KAFFIRS TRYING TO GO BETTER

The plethora of uranium news has given the Kaffir market radioactive indigestion. Kaffirs have been trying to go better and on Thursday afternoon did so. This can be attributed to the several good results announced by Mr. Harry Oppenheimer in his statement to shareholders of the Anglo American Group's O.F.S. mines yesterday in Johannesburg.

F.S. Geduld's developments since the end of the December quarter from No. 1 shaft showed 100 per cent payability of 70 ft. sampled averaging 1.535 in. dwt. Development from No. 2 shaft gave 100 per cent payability and values averaging

1.358 in. dwt. Western Holdings was also excellent. 1,105 ft. were sampled, showing 100 per cent payability and values averaging 1.215 in. dwt. compared with 1.045 in. dwt. last quarter. Steyn showed a 100 per cent payability and good uranium values on all three reefs.

Certainly Mr. Eisenhower's economic message indicating no further tightening of the monetary screw, helped Wall Street recover. But over the period January 17 to January 23 *The Dow Jones Industrial Index* showed a fall to 479.93 from 484.01. In London, the strength of sterling was a feature and most sections of the House notched up a few points. Over the week, the *F.T. Industrial Ordinary Index* advanced 5 points to 186.1.

FINANCIAL NEWS AND RESULTS IN BRIEF

Details of R.S.T. Capital Plans.—Full details of the R.S.T. Group's capital reorganization proposals have now been circulated to shareholders. Mufulira's nominal capital is to be increased to £18,000,000 and a sum of £5,718,558 capitalized which, together with share premiums of £1,333,274, will be applied in paying up 7,051,832 shares of £1. New fully paid shares will then be issued in the proportion of one for five.

Roan Antelope's capital will also be increased to £18,000,000 and a sum of £7,190,150 capitalized and applied in paying up in full 28,760,602 shares of 5s. each. This will enable an allotment in the proportion of four for five.

In the case of R.S.T., whose principal asset is about 63.98 per cent in Mufulira, sums amounting to £5,654,865 will be capitalized and applied in paying up in full 22,619,458 shares of 5s. A 100 per cent scrip issue will then be made.

W. Decalta Petroleum.—Negotiations are in progress under which the Central Mining and Investment Corporation and Selection Trust (through their Canadian subsidiaries) may acquire an interest in Western Decalta Petroleum at a total cost of \$6,150,000 Canadian currency. Western Decalta is a Canadian company which, besides owning substantial oil reserves, is concerned with developing further resources mainly in Alberta.

Dividends from the Kadunas.—Although Kaduna Prospectors has decided against an interim dividend for the year ended December 31, 1956, it is anticipated that profits will be sufficient to allow payment of 12½ per cent for the year. This would be the same as for 1955. Kaduna Syndicate has declared a 25 per cent interim compared with the previous corresponding payment of 16½ per cent.

Kepong to Return 2s.—Kepong Dredging Co. has proposed that its capital be reduced from £140,000 to £81,000 by returning 2s. per share.

St. John d'El Rey Negotiations Break Down.—Negotiations with a leading American mining company for the development of St. John d'El Rey Mining's iron, gold and other mineral resources have been terminated.

Representing American stockholders owning "a very substantial interest" in the company, Mr. H. Thomas Osborne (of Messrs. Osborne and Thurlow, New York) and Mr. I. Kerman have been appointed to the board. These stockholders are in touch with other developers of iron ore properties, and the company is hopeful that finance for development will be forthcoming.

Following Lord Rathcavan's resignation earlier, Lord Remnant and Mr. Richard Fort have now also resigned. This is due to the very substantial interest in St. John d'El Rey which has been acquired on American account.

S.W. Africa Co.'s December Quarterly.—During the December quarter of 1956 production of lead and vanadium at S.W. Africa Co.'s Abenab West Mine increased to 423 tons of lead (316 tons) and 99 tons of vanadium pentoxide (62 tons). Lead produced from the mine's massive sulphide orebody amounted to 731 tons against 786 tons. Zinc production declined to 1,187 tons from 1,240 tons.

Higher Profits at Murchison.—Consolidated Murchison's estimated profits during the final three months of 1956 rose to £266,344 from £212,318 during the September period.

No Final From Petaling.—Owing to continued disappointing results no final dividend has been recommended by Petaling Tin for the year ended October 31, 1956. A full review of the company's position is to be given by the chairman in his forthcoming statement to shareholders.

(Continued on page 128)

POTGIETERSRUST PLATINUMS LIMITED

(Incorporated in the Union of South Africa)

Statement to Members by the Chairman, Mr. D. A. B. WATSON, on the Directors' Report and Accounts for the Year ended August 31, 1956.

(Issued to Members prior to the Thirty-second Annual General Meeting to be held in the Board Room, Consolidated Building, corner of Fox and Harrison Streets, Johannesburg, on Thursday, January 31, 1957, at 9.30 a.m.)

The Report and Accounts for the year ended August 31, 1956, have been in the hands of members for some time and

there is nothing that I can usefully add to the information contained therein.

In accordance with usual practice, members also received as annexures to this Company's Report and Accounts copies of the Annual Report and Accounts of Rustenburg Platinum Mines Limited. A statement by the Chairman of Rustenburg Platinum Mines Limited

has been issued to the members of that Company, and it has been decided that that Statement should be made available to the members of this Company before the Annual General Meeting to be held on January 31, 1957. The Statement is accordingly annexed hereto.

January 22, 1957.

RUSTENBURG PLATINUM MINES LIMITED

(Incorporated in the Union of South Africa)

Statement to Members by the Chairman, Mr. D. A. B. WATSON, on the Directors' Report and Accounts for the Year ended August 31, 1956.

(Issued to Members prior to the Twenty-fifth Annual General Meeting to be held in the Board Room, Consolidated Building, corner of Fox and Harrison Streets, Johannesburg, on Thursday, January 31, 1957, at 9.15 a.m.)

CURRENT OPERATIONS

Production

The 1955/56 expansion programme proceeded satisfactorily, and by the end of December, 1956, milling was at the rate of approximately two million tons per annum. Small quantities of additional platinum arising from the increased scale of operations are now beginning to reach the market and these quantities will increase steadily during 1957.

Labour charges and the cost of stores and materials have suffered the same inflationary trends as those which have affected other industrial undertakings in recent years, and the costs incurred in production have again increased during the year.

Sales and Revenue

The demand for platinum remains strong and all available quantities of refined metal are being sold. Upward revisions of price were made during the year, the latest being in February, 1956. The average price received during the financial year was approximately £3 per ounce higher than that received in the previous year. Revenue derived from the sales of platinum amounted to approximately 75 per cent. of the total gross revenue from the sales of all metals.

The total production of refined copper and nickel was sold, the revenue from the sale of these two metals representing approximately 15 per cent. of the total gross revenue from the sale of all metals. The average price received for copper during the year under review was £357, which was about £50 per ton higher than that received in 1955, whilst the price of nickel remained unchanged.

Sales of the other associated metals, which accounted for the remaining 10 per cent. of the gross revenue, were less than in the financial year 1955, during which year your company was able to dispose of the major portion of the previously accumulated stocks of palladium. The current market value of the quantity of refined associated metals added to stocks during the year represented about 4 per cent. of the total

revenue derived from the sales of all metals during the same period.

Profit and Appropriations

The profit from the year's operations, after providing for the State's share of profits and taxation, and after adjusting the Stock Realisation Reserve, amounted to £2,277,035, compared with £2,258,681 in the previous year. The increase in revenue from the sales of metals was offset by an increase in expenditure which arose partly from the general rising trend of costs referred to above, and partly from the cost of increasing the scale of operations at the mine, the effect of which is felt prior to the receipt of revenue from such an increase.

The unappropriated profit brought forward from the previous year amounted to £593,110 and this, together with the current year's profit of £2,277,035, gave a total of £2,870,145 which was dealt with as follows:—

| | |
|--|------------|
| Appropriated for capital expenditure | £688,233 |
| Transferred to General Reserve to finance the increase in the value of stores and materials (other than capital equipment) | 173,897 |
| Dividends totalling 40s. per share | 1,694,780 |
| Total | £2,556,910 |

leaving an unappropriated profit of £313,235. It is satisfactory to note that dividend payments were again increased during the year despite the increase in the number of shares issued.

Capital Expenditure

The cost of the 1955/56 programme has been in accordance with the estimates. Capital expenditure during the year amounted to £1,368,433, which amount included £1,285,620 spent on plant and equipment, buildings, etc., whilst the balance was made up by the cost of an increase in the stocks of stores and materials required for the capital expansion programme, and by the amount of a loan repayment. Of the total expenditure, the sum of £680,200 was financed out of funds raised by the issue of new shares during the financial year, whilst the balance of £688,233 was appropriated from profits as mentioned above. At August 31, 1956, an amount of £350,000 remained from the proceeds of the new

share issue and will be utilized to provide part of the funds required to meet capital expenditure during the year ending August, 1957.

Stock Realisation Reserve

It was decided during the year to change the method used to determine the cost of and therefore the value of platinum and other metals on hand and the consequential appropriations to the Stock Realisation Reserve. Since 1942, when this accounting procedure was inaugurated, the total mine costs had been allocated equally over all metals without making a distinction between platinum and the associated metals. Until recently, this basis has been satisfactory, but with the gradual increase in the overall cost of production, the cost allocated against certain of the associated metals has in some cases exceeded their current market prices and any sales of such metals therefore resulted in an apparent book loss. In deciding upon the new method of allocating cost, due consideration was given to the fact that the associated metals arise as inevitable by-products of the process of mining, recovering and refining platinum, and it is only at the very last stage of their ultimate refinement and preparation for market that there is any choice as to whether or not to produce these metals. The cost of this final operation is small and, in consequence, the saving in expenditure which would flow from a decision not to complete the refining process would be negligible. Having regard to these facts, it is reasonable that, with the exception of a notional amount of £1 per ounce in the case of the associated platinum group metals and gold and £1 per ton in the case of nickel and copper, the whole cost of mine production should be charged against the production of platinum. This procedure was put into effect during the financial year ended August 31, 1956.

A schedule has been included in the Directors' Report showing the net revenue from sales of metals and the transfer to Stock Realisation Reserve calculated both on the old and the new bases. As will be seen from that schedule, although on the new basis the net revenue from sales is some £703,000 less than on the old basis, the transfer to the Stock Realisation Reserve is reduced by an equal amount and the amount of profit available for appropriation remains the same in each case. It is considered that the new method pro-

vides a more realistic picture of the results of trading operations.

FUTURE OPERATIONS

Market Outlook

The demand for platinum during the past year exceeded supplies and during the coming year this position is likely to continue. The amount of metal offered from Russian sources and the prices paid for such offerings cannot be accurately determined, but these do not seem to have been such as to affect the market materially during the past year. It is difficult to forecast future trends in the price of platinum, but it appears at present that no major variations are likely to take place during the current financial year, ending August, 1957. This statement must be accepted with reserve as the position could change rapidly under the influence of unforeseen factors.

Demand for the associated platinum group metals remains unchanged. The entire output of some of the metals is sold while stocks of others continue to accumulate. In order that these accumulations may be viewed in their proper perspective, it should be noted that approximately 94 per cent. of the total weight of all platinum group metals brought into a refined state during recent years has been regularly and readily sold. The balance of 6 per cent. includes associated metals which are not readily saleable, though sales of such metals are effected from time to time.

The demand for copper and nickel is such as to absorb the whole of the output and it is expected that this position will be maintained. The average price for copper for the financial year was £357 with a peak of about £436 in March, 1956. At the end of December, 1956, the price had declined to approximately £273 and it appears unlikely that the high prices ruling in the last financial year will be obtained during the current year. On the other hand, the price of nickel was increased from £519 to £600 on December 6, 1956. Variations in the accepted world price of this metal are infrequent and it may be assumed that the present price is unlikely to be reduced in the near future.

Scale of Operations

Towards the end of the financial year it became apparent that the indicated demand for platinum during the next few years was such that consideration should be given to the desirability of again increasing production.

Current demand, and the estimated future demand, arise chiefly from the expanding industrial uses of platinum, the most important of which at the present time is as a catalyst in the process of refining petrol. The policy of this company has in the past been to endeavour to meet the requirements of industrial users to an extent which will enable them to plan ahead on the basis of a steady supply at steady prices, although the rapid increase in the use of platinum by the Oil Refining Companies during recent years has to an extent overtaken our efforts to make adequate supplies available.

In considering the question of further expansion, due consideration has been given to the fact that the needs of the Oil Industry are of a capital nature and that, on completion of the refineries which are at present being built or

which have been planned, there is likely to be a decline in the demand for platinum by this particular branch of industry. The present estimated requirements over the next few years, are, however, such that it has been decided that further production beyond that contemplated in the 1955/56 programme is desirable, and a further expansion scheme, known as the 1956/57 programme, has been put in hand. On the completion of this programme, the combined milling rate at the two mines will be approximately 2,500,000 tons per annum and the rate of production of platinum will be approximately 80 per cent. greater than the rate for 1955. It is of interest to note that when this programme is finished, the rate of production will be almost eight times as great as that obtained ten years ago.

The additional milling capacity required will be obtained by erecting a second reduction plant at the Rustenburg Section. This has been placed some distance from the existing plant with a view to balancing operations between the eastern and western sections of the mine, thus minimising the transport required to handle the ore mined over the eight miles which comprise the strike length of the present mining area. Numerous ancillary items of plant, such as compressors, smelters, converters, etc., will be required and it is necessary to increase accommodation both for Europeans and for Natives. Work on the scheme has already started and it is expected that milling will reach the full designed rate during the second half of the calendar year, 1957. Some additional refined platinum arising from this programme should begin to reach the market from the beginning of 1958.

In view of the increasing scale of operations, steps have been and are being taken to increase still further the mining areas available to the company.

Finance

The cost of the 1956/57 scheme will be of the order of £1.8m. and the greater portion of this will be spent during the current financial year.

After considering the means by which this could be financed, the Board has decided that under present conditions the expenditure involved can reasonably be met from the company's resources. It is realized that the continuing schemes of expansion which have been undertaken during recent years have necessitated large appropriations from current profits. As a result of the length of time required for the treatment and refining processes there is considerable delay between the expenditure involved in the completion of the expansion programmes on the mine and the receipt of the additional revenue and profits which ultimately arise from such expansion. In order to meet this position to some extent, the present intention of the Board is to take cognizance of the fact that, in determining the profits available for distribution during the next two years, the whole of the capital expenditure incurred during any one year or any one period need not necessarily be met by appropriation from the profits earned during that period. Consideration will be given to the possibility that, in order to relieve to an extent the burdens placed on present shareholders, some portion of the appropriation necessary to meet the cost of the 1956/57 expansion scheme may reasonably be carried over into the period during which the benefits of this scheme will begin to be felt.

If necessary, the advisability of arranging temporary loan facilities will be considered; such facilities if required, are unlikely to be extensive and would be of short duration.

Matte Smelters

The plant of Matte Smelters (Pty.) Limited continues to operate very satisfactorily and is being increased to deal with approximately 50 per cent. of the total matte production which is expected to arise on the completion of the 1956/57 expansion scheme.

CONCLUSION

It is estimated that by the end of 1957 the annual working expenditure in South Africa both on the mines and at the plant of Matte Smelters will be approximately £6m. and that approximately 1,600 Europeans and 15,000 non-Europeans will be employed at these mines. The operations of your company are, therefore, on a scale which is of importance not only to the districts in which the mines are situated, but also to the country as a whole.

As has been stated in the past, it is difficult accurately to forecast the future demand for platinum. With the assistance of our refiners and marketing agents, Messrs. Johnson, Matthey & Co., Limited, the developing requirements of the world are closely watched and your company will continue in its endeavours to further the use of platinum by ensuring that the needs of industry are met in so far as may be possible and by following a price policy which will inspire the confidence of our customers.

January 22, 1957.

APEX (TRINIDAD) OILFIELDS

The thirty-seventh annual general meeting of Apex (Trinidad) Oilfields Limited was held on January 23 in London.

Mr. F. R. Cottell, chairman, in submitting the accounts for the year ended September 30, 1956, said that after provision for depreciation of fixed assets, net oil revenue was £1,347,000.

After providing £833,000 for taxation in Trinidad and the United Kingdom, the net profit for the year was £616,000.

The Directors recommended the payment of a final dividend of 1s. 6d. free of income tax per 5s. unit of stock requiring £330,000, making a total dividend for the year of 1s. 9d. free of income tax per unit of stock. The dividend would be paid on January 30, 1957.

Capital and reserves employed in the business totalled £5,622,000 and current assets at £6,132,000 exceeded current liabilities and future taxation by £4,238,000.

The production for the year was 2,972,000 barrels of crude oil and 3,749,000 gallons of casinghead gasolene.

During the year 110,462 feet were drilled. 18 wells were drilled in the Main Field, 3 in the Synclinal area and 1 in the Cedros area of the south-west Peninsula.

The price received for oil and casinghead gasolene continued to be on a basis related to United States prices and was virtually unchanged for the year under review.

The decrease in the revenue for the year was accounted for only in part by the slight fall in production, the main factor being the further rise in expenses.

The report and accounts were adopted.

JOS TIN AREA (NIGERIA) LIMITED

The Ordinary General Meeting of Jos Tin Area (Nigeria), Ltd., was held on January 23, 1957, in London.

The Chairman, **Mr. A. B. D. Fox, A.R.C.S.**, presided.

The following is his statement which was circulated with the Report and Accounts for the year ended 31/7/56.

In spite of difficult business conditions, generally, the results for the year to July 31, 1956, can be regarded as very satisfactory.

Our thanks are due to the management and staff in Nigeria and London for their work, skill and loyalty which have made this possible.

The results of the year's working show:—

| | Year to July 31, 1956 | Year to July 31, 1955 |
|--|-----------------------------|-----------------------------|
| The sales of Tin Concentrates were (tons) ... | 139 | 147 |
| The average price obtained (per ton) ... | £553 | £513 |
| The costs per ton were ... | £411 | £389 |
| The average price of Tin metal per ton was ... | £775 | £721 |

£13 of the rise in costs of £22 per ton is accounted for by the increased Royalty payable to the Government of Nigeria. The output of Columbite as a by-product continues on a small scale but the demand for this mineral is fluctuating and uncertain.

A substantial addition to the profit on mining was the income from investments which, before tax, amounted to £32,291, an increase of more than £5,000 on the previous year, giving a return of 6.6 per cent. based on market prices.

At July 31 the quoted investments stood at £285,755 on the books, with a market value at that date of £485,859, an appreciation of 70.03 per cent. 97.27 per cent. of the investments was in Ordinary Shares. The investments numbered 138 with a distribution as follows:—

| | |
|-------------------------------------|--------|
| Government Stocks ... | 1.6% |
| Banks and Insurance ... | 20.2% |
| Commercial and Industrial ... | 38.7% |
| Financial and Investment Trusts ... | 10.3% |
| Mines and Oil ... | 29.2% |
| | 100.0% |

Without reducing the total of invested funds a substantial cash balance was built up at the year end. This was required not only in respect of our assessed contribution to the Buffer Stock, in connection with the International Tin Agreement, but also in anticipation of the purchase of properties in Nigeria of another Company.

This purchase of fourteen Leases, three Exclusive Prospecting Licences and other titles has been concluded for the sum of £16,000. In addition, we have purchased the plant, stocks and stores on the properties. The areas in question are about 50 miles north of our main camp and have good communications. We expect that they will provide us, for some years to come, with a useful additional source of Tin concentrate, together with some Columbite.

It is a matter of satisfaction that we are able again to recommend a dividend of 20 per cent. on the capital as increased by the bonus issue in February last. The

carry forward of £17,344 compares with £8,476 last year.

As to the current year, for the four months up to the end of November production of Tin concentrate amounted to 63 tons as compared with 47½ tons. The price of the metal has been buoyant. An estimate of future prospects is, however, impossible in view of the present world turmoil. The stock markets have been unsettled, and a cautious policy seems more than ever necessary.

RAMBUTAN, LIMITED

MR. D. W. THOMAS'S STATEMENT

The fifty-first annual general meeting of Rambutan Limited was held at the Registered Office of the Company, Station Hill, Redruth, on January 23, 1957.

Mr. D. W. Thomas (chairman) presided.

The Reports and Accounts for the year ended June 30, 1956, having been circulated for the prescribed time, were taken as read, as was also the Chairman's Statement, circulated with the Reports and Accounts which was as follows:—

The Accounts for the financial year ended June 30, 1956, show a profit of £21,797 after payment of Royalty of £16,806 to the Malayan Government in respect of Tin-ore sold during the year and the provision of £27,624 for United Kingdom and Malayan Taxation.

The decreased output was due to a reduction in the volume of ground treated, 415,400 cubic yards as compared with 840,700 cubic yards in the previous year when owing to favourable conditions, the yardage treated was exceptional. The average recovery was higher at 0.81 kati per cubic yard as compared with 0.47 kati per cubic yard in 1954/55.

Dividends totalling 6s. 6d. per share were paid in respect of profits for the year and absorbed a nett amount of £18,688.

A sum of £1,426 has been written off Capital Expenditure and the balance standing to the credit of Profit and Loss Account is increased from £15,098 to £16,978, which the Directors propose to carry forward.

Prospects for Current Year

The attention of members is drawn to the Report of our General Managers, Messrs. Osborne and Chappel, circulated with the accounts, which gives particulars of work done at the Mine during the period under review. Shareholders will note that it is stated that prospects for the current year are satisfactory although a somewhat lower rate of output is anticipated.

The Return for the first five months of the current year is 71½ tons as compared with 101 tons for the corresponding period of the previous year.

The International Tin Agreement came into force on July 1, 1956, and the Tin Control (Buffer Stock) Regulations, 1956, became operative in September, 1956. Your Company's cash contribution to the Buffer Stock is being made from current production according to the scale laid down by the Malayan Government. The amounts of your Company's contributions during the months of October and November were £601 and £609 respectively.

Capital Repayments

In May, 1956, the Shareholders by Special Resolution approved a reduction in the Capital of the Company from £100,000 divided into 100,000 shares of £1 each to £62,500 divided into 100,000

shares of 12s. 6d. each, such reduction to be accomplished by returning to Shareholders of the 100,000 shares capital to the extent of 7s. 6d. per share. At the same time a Resolution was passed restoring the nominal Capital of the Company to the original amount of £100,000 by the creation of 60,000 unissued additional shares of 12s. 6d. each.

These Resolutions were later approved by the Court and the sum of 7s. 6d. per share was returned to Shareholders in August of the current year, free of liability for Income Tax and Sur-Tax in their hands.

With the subsequent coming into force of the International Tin Agreement and the publication of the Tin Control (Buffer Stock) Regulations, 1956, your Board was able to further assess the Company's future financial commitments and to recommend a second capital repayment of 7/6d. per share. At an Extraordinary General Meeting held on November 7, 1956, Shareholders unanimously approved a Special Resolution giving effect to this recommendation and the application to the Court for Confirmation has now been made.

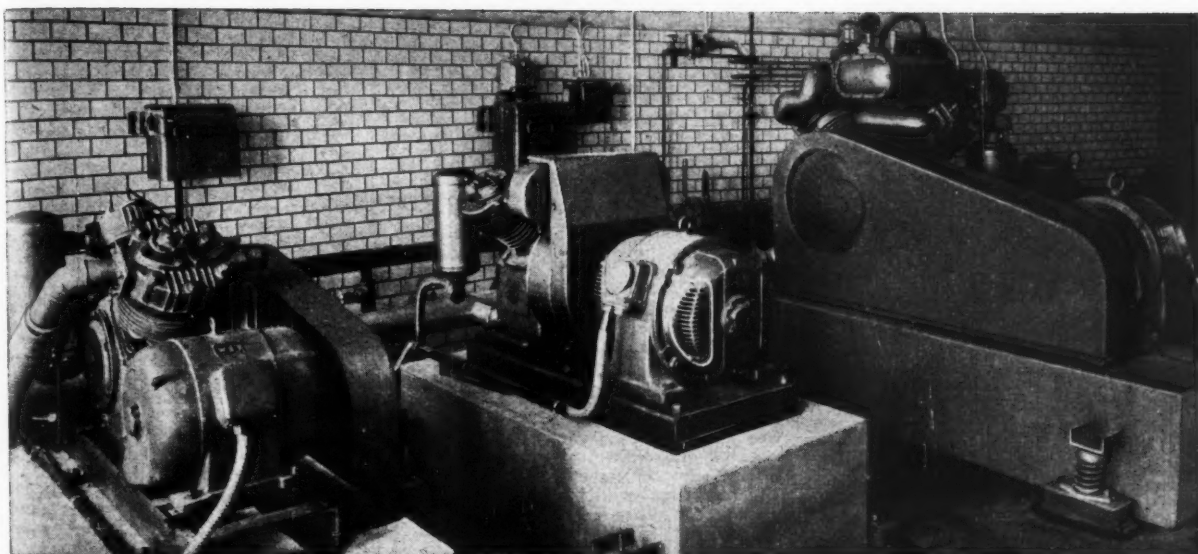
Security conditions on the property remain satisfactory and no incidents occurred during the year under review.

In conclusion I would like to express to our General Managers, the Resident Manager and Staff in Malaya, and the Secretary and Staff at Redruth, the Board's sincere appreciation of all that they have done for the Company during the year under review.

The Statement of Accounts, and Balance Sheet, together with the Directors' Report, were received and adopted.

MALAYA. Mining Engineers required for group of Tin Mining Companies. Only trained personnel considered. Commencing salary according to training and experience. Provident Fund and non-contributory pension scheme. Three-year contracts with six months' home leave on full pay. Excellent prospects for suitable men. Write giving full particulars of age, education, training and experience and marital status. Box 246, Walter Skinner, Ltd., 20, Copthall Avenue, London, E.C.2.

Hunting Technical Services Ltd., a company advising on development projects overseas now wish to augment their staff by appointing an **ENGINEERING GEOLOGIST**. He should preferably have experience in all branches of this work but the principal requirement at present is for geological work on hydrological and irrigation schemes. The person selected will technically be responsible for engineering geology and it is essential that he should have the academic and personal qualities requisite to take charge of the Company's activities in this field. Although the post is U.K. based he must be prepared to undertake frequent tours overseas. A good salary will be paid in addition to allowances for overseas work. For further details apply to 6 Elstree Way, Boreham Wood, Herts. **ELSTree 2214.**



For limited demands of air, choose

ATLAS COPCO CT & NT COMPRESSORS

The Atlas Copco CT and NT series is a range of small stationary compressors with air capacities ranging from 40 to 300 cubic feet per minute. Both CT and NT compressors are air-cooled, two-stage, single-acting machines that can be easily mounted on a proper foundation or on a skid base. Some NT compressors are also supplied as complete power-pack units.

CT and NT compressors are compact, thoroughly reliable, and constructed on the same rugged lines as the well-known Atlas Copco AR series. For running air tools, for manufacturing processes where limited amounts of air are required, and for constructional and mining operations, CT and NT compressors fill the bill perfectly. Built for continuous service, highly efficient and low on maintenance costs, CT and NT compressors are an exceptionally economical proposition.

Air Cooling and Pressure Lubrication

Because they are air-cooled, CT and NT compressors are independent of a water supply—often a problem on contractors' sites. And to eliminate belt troubles

the fan of the CT compressor is operated from the crankshaft by means of bevel gears. Other outstanding features, and not usually found on small compressors due to the expense, are pressure lubrication and, on the CT, main crankshaft roller bearings. Such features indicate the thought and care that have gone into the design and construction of Atlas Copco CT and NT compressors—the finest of their type available.

World-Wide Sales and Service

The Atlas Copco Group puts compressed air to work for the world. It is the largest group of companies specialising solely in the development and manufacture of compressed air equipment. It embraces Atlas Copco companies or agents manufacturing or selling and servicing Atlas Copco equipment in ninety countries throughout the world. For further details of the equipment featured here, contact your local Atlas Copco Company or Agent. If you have any difficulty, please write to:—Atlas Copco AB, Stockholm 1, Sweden, or Atlas Copco (Great Britain) Ltd., Beresford Avenue, Wembley, Middx.

THE *Atlas Copco* GROUP OF COMPANIES

Manufacturers of Stationary & Portable Compressors, Rock-Drilling Equipment, Loaders, Pneumatic Tools & Paint-Spraying Equipment

WESTMINSTER BANK LIMITED

IMPROVED EARNINGS

The annual general meeting of Westminster Bank Limited will be held on February 13 in London.

The following are extracts from the statement by the chairman, **The Rt. Hon. Lord Aldenham**, circulated with the report and accounts for the year 1956:—

The Accounts for the year reveal an increase of £156,000 in our profits, an increase which is in the main attributable to the higher interest rates ruling since last February. Our Current, Deposit and Other Accounts have risen by nearly £6 million. You will recollect that this time last year I had to report a fall in this item of nearly £65 million, the result of the stringent monetary and credit policies introduced by the Government during 1955. On the other side of the balance sheet the rise of approximately £6 million in Advances may at first seem somewhat out of line with present policy. This is not the case, however, for it is more than accounted for by the increase in our lending to the Nationalized Industries.

Whilst our earnings have improved, the rise last February in the Bank rate not only had the immediate effect of increasing rates of interest on advances generally, but also resulted in an increase in the rate paid on deposit accounts—a fact which customers were not slow in recognizing.

Regarding Investments, our other main earning asset, we accepted redemptions during the year which, after a measure of re-investment, reduced our figures by nearly £7 million. Our Government securities are all dated, the great majority maturing within ten years.

Our principal item of expenditure continues to be that comprising payments made to or for the benefit of staff. These costs have grown once again, largely as a result of the introduction in January, 1956, of an improved basis of remuneration for the active staff. During the past year we opened 25 new banking offices. This brought the total number to 1,171.

Another and very important aspect of our development over the past years has been in the field of mechanization.

We sent three senior officials of our Bank on a mission to the United States and Canada for a period of three months in the latter half of the year and we are most grateful to our banking friends there for the help which they gave to them.

Suez Canal Action

The Middle East crisis has been all the more disappointing in the light of the economic improvement here during the first half of 1956. Both the value and the volume of our exports had steadily increased, and the gap between our exports and our imports had been narrowed. Looking back over only nine years, it is surely a very fine achievement to have nearly doubled the volume, and nearly trebled the value, of our exports.

Our gold and dollar reserves had been steadily mounting during January to June. But the Suez crisis has changed all that, and the dollar gap must now be greatly increased by the purchase of oil with dollars instead of with sterling. In these circumstances it was not unnatural that there should be some doubts abroad as to the stability of the pound sterling; and it was therefore most satisfactory to note the prompt and effective steps taken by the Chancellor of the Exchequer to

make sure that there should be no new devaluation. But this determination to defend the present value of sterling must be backed up by appropriate action here at home by both the Government and the nation. If we as a nation can shew restraint in the matter of profits and wages, and quickly restore the trading position of the first six months of 1956, we shall help to make those who doubted sterling regret their doubts, and we shall help also to avert inflation, which has rightly been described as "the harshest tax of all".

Credit Squeeze

The credit squeeze by the banks had to be maintained and even intensified during the year, and has at last been reinforced by a somewhat similar squeeze in the sector of public finance; though I still feel that, by contrast with the Central Government and with Local Authorities, the banks have been asked to carry more than their fair share of the task of exercising monetary restriction. The published figures of the movements in the different categories of advances shew clearly that the squeeze has been selective. It is sincerely to be hoped that in the relatively near future we shall be enabled to judge all applications for assistance purely on their merits from a banking standpoint and not with the spectre of "directives" looking over our shoulders.

Great progress has been made in bettering our factories and plant during 1955 and 1956, and, judging by plans already approved, that progress should continue during 1957.

Government Policy

Government policy has aimed at securing a redeployment of manpower. During 1956 this process has been going on and the lag in production that has occurred is part of the price that we are having to pay to secure a redistribution of manpower.

Circumstances compelled the authorities to show the red light of high short-term rates of interest but, as the Governor of the Bank of England said a few months ago, we shall none of us feel comfortable until they can be reduced. They raise the cost to this country of the sterling balances held by foreigners, they hamper any attempts the Government must wish to make to fund short-term debt, and they check capital investment in industry.

European Free Trade Area

One of the most interesting and most promising events of the year has been the more or less general acceptance in principle of the idea of a European Free Trade Area for manufactured goods. I believe that the creation of such an area is in the interests of this country. Our most efficient industries would benefit by greatly increased open markets, our less efficient industries would receive a needed incentive, and throughout the Area the consumer would gain by the increase in effective competition; it is high time that the interest of the consumer should be considered.

In any summary of the year 1956, it would be idle to deny that events in the Middle East have given a severe setback to the national economy, yet with so much achieved in the last few years it would be faint-hearted indeed to let that temporary setback fill us with dismay.

ELECTRICAL ENGINEER

Required at a Gold Mine in the Gold Coast, West Africa. Continuous contract with 15 months' tour and 3 months' leave on full pay. Minimum starting salary, £100 per month. Passage paid both ways. Free quarters and medical service, low income tax. A Provident Fund is in operation. Applications, stating age and experience to Konongo Gold Mines Limited, 49, Moorgate, London, E.C.2. Envelopes should be marked "Electrical Engineer".

GEOLOGISTS required by Hunting Technical Services Ltd., a company specialising in development studies overseas. The work combines photogeology with field trips and is U.K. based with overseas tours of up to six months annually. The work demands a sound academic background and some years field experience, preferably exploration work involving field mapping. Work on pre-cambrian or sedimentary areas is of particular interest at present. For full details apply Hunting Technical Services Ltd., 6 Elstree Way, Boreham Wood, Herts. EL5 2JH.

GOVERNMENT OF TANGANYIKA

METALLURGIST (MINERAL DRESSER) GEOLOGICAL SURVEY DEPARTMENT

Qualifications: A degree in Metallurgy, Mining or Mineral Dressing or its equivalent together with some practical experience in the duties of this post.

Duties: Mineral dressing tests on batch and pilot plant scale. Advice to private operators on milling problems. Pilot mill design. Sampling of tailings, dumps and mill products. Cyanidation of gold ores. Occasional short visits to mines.

Terms of appointment: Pensionable emoluments in the scale £939—£1,863. Outfit allowance £45. Furnished quarters when available at rental. Free passages on appointment and on leave. Generous leave. Income tax at local rates.

Apply to Director of Recruitment, Colonial Office, London, S.W.1, stating briefly age, qualifications and experience: quote BCD 105/8/011.

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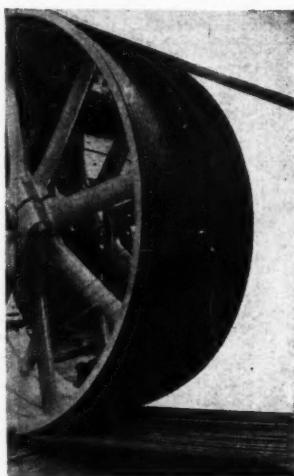
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Tin Output in Tons of Tin Concentrates October—December, 1956

| Company | Oct.- Dec. 1956 | Months since year end | Financial Year to Date | | Company | Oct.- Dec. 1956 | Months since year end | Financial Year to Date | |
|-------------|-----------------------|--------------------------|------------------------------|-------|---------------|-----------------------|--------------------------|------------------------------|-------|
| | | | This | Last | | | | This | Last |
| EASTERN | | | | | S. Tronoh | 206½ | 12 | 735 | 850½ |
| Ayer Hitam | 127½ | 6 | 200½ | 342½ | Sungei Besi | 338½ | 9 | 1073½ | 871½ |
| Kepong | 102½ | 6 | 175½ | 161½ | Sungei Way | 360½ | 6 | 636½ | 737 |
| Malayan Tin | 636½ | 6 | 1228½ | 1299½ | Tekka-Taiping | 134½ | 2 | *134½ | † |
| Petaling a | 235 | 2 | 235½ | 379½ | Tronoh | 661½ | 12 | 2631½ | 2794½ |
| Puket | 75 | 12 | 514½ | 711½ | | | | | |
| Siamese Tin | 795½ | 12 | 3215½ | 2556 | NIGERIAN | | | | |
| S. Malayan | 641½ | 6 | 1294 | 1454½ | Jos Tin | 18½ | 5 | 68½ | 61 |

a No. 4 Dredge restarted operations on a reduced scale at the end of November.

*Three months.

†Not comparable.

West African Gold Production October—December, 1956

| Company | Oct.-Dec., 1956 | | | Months since year end | Current Financial Year Total to date | | | Last Financial Year Total to date | | |
|----------------|-----------------|----------------|------------------|--------------------------|--|----------------|------------------|---|----------------|------------------|
| | Tons (000) | Yield (oz.) | Profit (£000) | | Tons (000) | Yield (oz.) | Profit (£000) | Tons (000) | Yield (oz.) | Profit (£000) |
| Ariston | 119.1 | 34,732 | 138.6 | 3 | 119.1 | 34,732 | 138.6 | 70.3 | 19,665 | 81.3 |
| Ashanti | 82.4 | 62,309 | 443.1 | 3 | 82.4 | 62,309 | 443.1 | 35.5 | 29,058 | 93.0 |
| Bibiani (1927) | 90.0 | 19,500 | 80.9 | 3 | 90.0 | 19,500 | 80.9 | 49.0 | 10,225 | L29.4 |
| Bremang* | 2488.2 | 12,619 | 51.3 | 12 | 8454.7 | 43,177 | 156.2 | 8140.4 | 38,186 | 122.1 |
| Konongo | 13.7 | 11,884 | 50.0 | 3 | 13.7 | 11,884 | 50.0 | 5.4 | 4,939 | 16.8 |

L indicates loss * Cu. yds. dredged. Profit figures include premium revenue.

NOTE: The figures under 'Last Financial year; total to date' are not strictly comparable with those for this year, since the strike of African mine-workers began on Nov. 20, 1955.



48, BURLINGTON ROAD, ISLEWORTH, MIDDLESEX

ROCK DRILLS

- 20 Holman S.L.9's with ¾" hex. chucks.
- 6 Consolidated CP.42's with 1" hex. chucks.
- 4 Climax 3½" Drifters with feed cradles, lug shank chucks.

PNEUMATIC TOOLS

- 20 Boyer longstroke rivet hammers, CP 60
- 20 CP.4 high lift sump pumps.
- 20 Consolidated picks, D.22's

ALL "AS NEW" OR RECONDITIONED

Financial News and Results

(Continued)

Bid for S.W.A. Co.—Following last November's announcement by the S.W.A. Co. that negotiations were in progress which might result in an offer being made for the company's shares (the implications of which were discussed at some length in the *Mining Journal*, issue November 30, 1956), a bid has been received from the Tsumeb Corporation of one new 5s. Tsumeb share plus 20s. in cash in exchange for every four S.W.A. Co. shares. It will be recalled that Selection Trust and American Metal hold between them about 43 per cent of the company's capital, and it was from this source that the bid had been expected. It is disclosed that Tsumeb intends to apply for a London Stock Exchange quotation for its shares. The offer is subject to Treasury approval.

Burma Corporation's Profits Decline.—During the three months ended September 30, 1956, Burma Corporation (1951) made net profits after deducting estimated taxation and depreciation of £111,375 compared with £139,672 for the previous quarter. It is pointed out that although the figure for expenditure compares unfavourably with that of the June quarter of 1956—which always reflects year-end adjustments—it accords closely with the average for twelve months ended June 30, 1956.

U-Tin's I.T.A. Contribution.—In his statement to shareholders of United Tin Areas of Nigeria for the year ended June

30, 1956, Mr. A. Hedley Williams stated that the company's contribution to the International Tin Agreement was £4,093. This was made in cash by way of a loan from the government of Nigeria bearing interest at 4 per cent per annum. Present indications, said Mr. Williams, were that any system of quota to curtail world production was unlikely to be introduced in the near future.

Better Profits at Ashanti.—Estimated profits of Ashanti Goldfields Corporation during December, 1956, after royalty, development and depreciation allowances, amounted to £107,651 against £95,294 during November.

Lower Ore Reserves at Lake George.—A drop in ore reserves took place at Lake George Mines during the past financial year ended June 30, 1956, to just under 1,500,000 tons averaging 5.95 per cent lead, 10.55 per cent zinc and 0.60 per cent copper. This compared with the previous year's figures of nearly 1,900,000 tons at 6.05 per cent lead, 10.85 per cent zinc and 0.58 per cent copper.

Klerksdorp's Uranium Reserves.—At the recent meeting of Klerksdorp Consolidated Goldfields, Mr. A. Hedley Williams, the chairman, stated that prospecting and development had proved ore equivalent to approximately 850,000 tons, having an average grade of 1.4 lb. of uranium oxide per ton over a reef width of 36 in. It might prove economical, said Mr. Williams, to mine this ore on a selective basis, in which case the company would only need to mine and treat 286,000 tons with an average

grade of 4 lb. uranium oxide per ton. These figures did not, however, indicate in any way the full potentialities of the whole area.

Benguela's 1956 Receipts Up.—Total receipts of the Benguela Railway Co. in 1956 increased from Esc.392,260,000 to Esc.472,300,000. Net operating receipts, after expenses, moved up to Esc.231,837,152 from Esc.157,177,368.

Patino In Canada.—The Patino interests of Bolivia have entered into Quebec's Chibougamau mining area with a commitment of \$1,500,000. This was announced recently in a joint statement from Copper Rand Chibougamau Mines, Chibougamau Jaculet Mines and Patino of Canada Ltd. The agreement, it is stated, has been designed to provide the finance necessary to bring Copper Rand and Jaculet into profitable production and is subject to approval by Copper Rand shareholders of an increase in that company's authorized capital from 5,000,000 to 6,300,000 shares.

John Summers Pays Same.—With the recommendation of a final dividend of 8 per cent on its 9,000,000 ordinary shares of £1 each in respect of the year ended September 29, 1956, total distribution by John Summers and Sons has been maintained at the previous year's 12 per cent level. Group profits advanced to £9,443,033 from £8,674,289 which after taxation, depreciation, replacement reserve and interest payments resulted in net profits of £2,770,601 compared with £2,897,809 previously.

LONDON STOCK EXCHANGE PRICES, JANUARY 23, 1957

| Finance | Price Jan. 23 | + or - on week | Rand Gold contd. | Price Jan. 23 | + or - on week | Diamonds and Platinum | Price Jan. 23 | + or - on week | Tin (Nigerian and Miscellaneous) contd. | Price Jan. 23 | + or - on week |
|---------------------------|---------------|----------------|---------------------------|---------------|----------------|---|---------------|----------------|---|---------------|----------------|
| African & European | 58/3 | -6d | W. Rand Consolidated | 32/6 | -1/10d | Anglo American Inv. | 9 7/8 | -3/8 | Gold & Base Metal | 147 | ..... |
| Anglo-American Corp'n. | 22/3 | -1/8 | Western Reefs | 30/7 1/2 | -10 1/2d | Casta | 109 1/4 | +3d | Jantar Nigeria | 1/3 | -1 1/2d |
| Anglo-French | 27/3 | ..... | O.F.S. Gold | ..... | ..... | Cons. Diam. of S.W.A. | 10 1/2 | -1/4 | Northern Area | 1/3 | ..... |
| Anglo-Transvaal Consol. | 28 1/2 | -1/- | Freddies | 6/3 | -1 1/2d | De Beers Dfd. Regd. | 5 1/2 | -1/8 | Kaduna Prospectors | 1/6 | ..... |
| Central Mining (£1 shrs.) | 57 1/2 | -1/- | Freddies Consolidated | 71/10 1/2 | -1/10d | De Beers Pfd. Regd. | 13 1/2 | -1/8 | Kaduna Syndicate | 2/4 1/2 | ..... |
| Consolidated G'fields | 61/6 | -1/1- | S.G. Geduld | 3/- | ..... | Pots Platinum | 16 1/1 1/2 | -6d | London Tin | 11 1/1 1/2 | +7 1/2d |
| Consol. Mines Selection | 33/9 | -1/- | Geffries | 25/3 | -1/3 | Waterfall | 26/6 | -9d | United Tin | 9d | ..... |
| Fast Rand Consols | 1/6 | ..... | Harmony | 4/10 1/2 | -4 1/2d | Copper | ..... | ..... | Silver, Lead, Zinc | ..... | ..... |
| General Mining | 71/3 | -2/6 | Loraine | 13/6 | ..... | Bancroft | 48/- | -9d | Broken Hill South | 67/16 | -2/3 |
| H. E. Prop. | 7/9 | +1 1/2d | Lydenburg Estates | 3/9 | -3d | Chartered | 73/9 | ..... | Burma Mines | 3/9 | ..... |
| Johnnies | 44/- | -9d | Mariespruit | 8/7 1/4 | -4 1/2d | Espesanza | 2/10 1/2 | -1 1/2d | Consol. Zinc | 76/3 | -2/3 |
| Rand Mines | 65/- | -1/3 | Middle Wits | 50/9 | +1/6 | Messina | 9 1/8 | -1/8 | Lake George | 11/10 1/2 | +9d |
| Rand Selection | 36/3 | ..... | Ofsets | 53/9 | +7 1/4d | Nichang | 12 1/2 | -1/8 | Mount Isa | 28/6 | -1/3 |
| Union Corporation | 40/- | -6d | President Brand | 30/9 | -4 1/2d | Rhod. Anglo-American | 5 1/2 | -1/8 | New Broken Hill | 53/6 | -6d |
| Vereeniging Estates | 5 1/2 | -1/8 | St Helena | 28/6 | ..... | Rhod. Katanga | 48/9 | -1/4 | North Broken Hill | 113/6 | -1/8 |
| Writs | 36/3 | -1/3 | Virginia Ord. | 9/3 | ..... | Rhodesian Selection | 47/10 1/2 | -1 1/2d | Rhodesian Broken Hill | 112/10 1/2 | -1 1/4 |
| West Wits | 34/6 | -9d | Welkom | 16/- | -9d | Rhokana | 40 1/2 | -1/2 | San Francisco Mines | 29/3 | -1/9 |
| Rand Gold | ..... | ..... | Western Holdings | 73/9 | ..... | Rio Tinto | 4 1/2 | -1/8 | Ururwa | 4/9 | -1 1/2d |
| Blyvoorss | 20/1 1/2 | -4 1/2d | West African Gold | ..... | ..... | Roan Antelope | 25/9 | -7 1/2d | Miscellaneous | ..... | ..... |
| Brakpan | 5/6 | ..... | Amalgamated Banket | 1/4 1/2 | ..... | Selection Trust | 5 1/2 | -1/8 | Base Metals and Coal | ..... | ..... |
| Buffelsfontein | 32/10 1/2 | -1/- | Ariston | 3/9 | -1 1/2d | Tanks | 7 1/2 | -1/8 | Amal. Collieries of S.A. | 2 1/2 | ..... |
| City Deep | 11/6 | ..... | Asanti | 17/3 | ..... | Thariss Sulphur Br. | 5 1/2 | ..... | Associated Manganese | 43/- | +2/6 |
| Consol. Main Reef | 12/6 | ..... | Bibiani | 2/- | ..... | Tin (Eastern) | ..... | ..... | Cape Asbestos | 10/3 | +9d |
| Crown | 27/6 | -7 1/2d | Bremang | 1/4 1/2 | -1 1/2d | Ayer Hitam | 25/- | ..... | C.P. Manganese | 28/10 1/2 | +2 7/8 |
| Daggas | 36/10 1/2 | -7 1/2d | C.C. Main Reef | 1/4 1/2 | -1 1/2d | Gongeng | 14/7 1/2 | +6d | Consol. Murchison | 62/6 | +1 1/2d |
| Dominion Reefs | 17/9 | -6d | Komogop | 1/3 | ..... | Ipop | 27/- | +1 1/2d | Natal Navigation | 50/9 | +1 1/2d |
| Doomfontein | 24/10 1/2 | -1/1- | Mariu | 1/3 | ..... | Kamunting | 10/9 | +3d | Wankie | 113/6 | -3/4 |
| Durban Deep | 25/- | -7 1/2d | Taquah | 1/1 1/2 | -1d | Kepong Dredging | 5/3 | +1 1/2d | Withbank Colliery | 5 1/8 | ..... |
| E. Champs. | 3/9 | ..... | Western Selection | 6/6 | -3d | Kinto Tin Mines | 23/9 | +6d | Canadian Mines | ..... | ..... |
| E. Daggas | 7/9 | -6d | Australian Gold | ..... | ..... | Malayan Dredging | 15/1 1/2 | -3d | Dome | \$26 | -1 |
| E. Geduld (4s. units) | 28/6 | -6d | Gold Mines of Kalgoorie | 14/- | -3d | Pahang | 13/- | -1 1/2d | Hudbay | \$50 | +3 |
| E. Rand Props. | 45/7 1/2 | -1/10d | Great Boulder Prop. | 12/9 | -1d | Pengkalan | 7/9 | -6d | Huddell Bay Mining | \$160 | +5 |
| Geduld | 75/- | -1/3 | Lake View & Star | 19/3 | +6d | Rambutan | 26/- | -9d | International Nickel | \$207 1/2 | +1 |
| Govt. Arcas | 3/- | -3d | Mountain Morgan | 16/6 | -6d | Siamese Tin | 12/6 | -9d | Mining Corp'n. of Canada | £8 | ..... |
| Grootvlei | 17/4 1/2 | -3d | North Kalguri | 8 | +1 1/2d | Southern Kinta | 16/9 | +4 1/2d | Noranda | \$103 | +4 |
| Hartebeestfontein | 45/7 1/2 | -3d | Sons of Gwalia | 1/9 | ..... | S. Malaya | 10/10 1/2 | -4 1/2d | Quemont | £7 1/2 | -1/8 |
| Libanon | 6/9 | -3d | St. John d'El Rey | 11/- | ..... | S. Tronoh | 7/4 1/2 | -1/2 | Yukon | 4/7 1/2 | ..... |
| Luipaards Vlei | 13/6 | +1/9 | Miscellaneous Gold | ..... | ..... | Sungei Kinta | 19/- | +6d | Oil | ..... | ..... |
| Marielave | 17/4 1/2 | +6d | Cam & Motor | 8/3 | ..... | Tekka Taiping | 7/10 1/2 | +3d | Apex | 41/9 | +9d |
| New Kleinfontein | 3/3 | -3d | Champion Reef | 13/- | ..... | Tronoh | 12/9 | ..... | Attock | 37/6 | +9d |
| New Pioneer | 13/4 | -4 1/2d | Falcon Mines | 7/10 1/2 | ..... | Tin (Nigerian and Miscellaneous) | ..... | ..... | British Petroleum | 131 1/2 | -3/4 1/2 |
| Randfontein | 33/3 | -1/3 | Globe & Phoenix | 21/3 | ..... | Amalgamated Tin | 10/10 1/2 | +1 1/2d | Burma | 85/9 | ..... |
| Randfontein | 33/3 | -1/3 | Madag | 9d | ..... | Best Tin | 50/3 | +1/9 | Cadillac | 64/6 | -1/4 |
| Robinson Deep | 7/- | -3d | Mysore | 3/3 | ..... | Bisichi | 4/4 1/2 | +1 1/2d | Mexican Eagle | 21/9 | +4 1/2d |
| Rose Deep | 8/3 | -3d | Nundydroong | 18/- | ..... | British Tin Inv. | 24/- | ..... | Shell | 159/4 1/2 | -3 1/2d |
| Simmer & Jack | 3/9 | -1 1/2d | St. John d'El Rey | 83/- | +12 1/2d | Ex-Lands Nigeria | 2/3 | ..... | T.P.D. | 45/3 | +3d |
| S.A. Lands | 22/6 | ..... | Zams | 50/7 1/2 | -7 1/2d | Geevor Tin | 20/6 | +6d | Ultramar | 61/6 | -1/6 |
| Spring | 2/3 | ..... |  |  |  |  |  |  |  |  |  |
| Stifffontein | 28/- | -6d | | | | | | | | | |
| Sub Nigel | 18/6 | -3d | | | | | | | | | |
| Van der Hoff | 3/9 | -3d | | | | | | | | | |
| Van Dijk | 2/9 | +6d | | | | | | | | | |
| Venterspost | 12/6 | -3d | | | | | | | | | |
| Vlakfontein | 15/1 1/2 | -1 1/2d | | | | | | | | | |
| Vogelstruisbult | 12/7 1/2 | +3d | | | | | | | | | |
| West Driefontein | 5 1/2 | -1/2 | | | | | | | | | |

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